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ABSTRACT

GRADES OR AGES: K-6. SUBJECT MATTER: Elementary Art--Constructions. ORGANIZATION AND PHYSICAL APPEARANCE: After a brief introduction and a scope and sequence chart, the guide is divided into seven sections, one for each grade covered, and these sections contain details for between three and nine projects, including the making of cheese boards, bookmarks, napkin holders, tool boxes, pencil cases and book covers. The text on each project includes objectives, materials and tools, and operations. There is also a detailed listing of materials and supplies and a glossary of terms. The guide is lithographed and spiral bound with a soft cover. OBJECTIVES AND ACTIVITIES: Objectives and activities are set out in detail for each project. INSTRUCTIONAL MATERIALS: Materials and tools are listed for each project and there is also a full listing of materials required for elementary art constructions. STUDENT ASSESSMENT: None. (MBM)

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BLOOMINGTON PUBLIC SCHOOLS

Bloomington, Minnesota 55431

ELEMENTARY ART CONSTRUCTIONS

A Supplement to the Elementary Art Guide 1968

Donald Lundman

SP 007 361

BLOOMINGTON PUBLIC SCHOOLS
Independent School District No. 271
Bloomington, Minnesota 55431

Mr. Fred M. Atkinson
Superintendent of Schools

Mr. P. Arthur Hoblit Assistant Superintendent in charge of Secondary Education	Mr. Bernard Larson Assistant Superintendent in charge of Elementary Education

Mr. Stanley Gilbertson
Director of Curriculum

INDUSTRIAL ARTS WRITING TEAM

Mr. Donald Lundman, Chairman

Mr. Howard Ernst	Mr. Richard Leiviska
Mr. Larrys Krueger	Miss Janet Minert

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ELEMENTARY ART GUIDE. . . CONSTRUCTIONS

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INTRODUCTION

The elementary constructions program for grades K-6 is an extension of the Bloomington elementary art curriculum. This program introduces the concept of expressing ideas graphically through drawings to the elementary student. It also acquaints them with a new variety of media such as wood, leather, plastics, and metal. The basic concepts of shaping, forming, cutting, and finishing are initiated in a variety of activities of graduated difficulty. The tools used will be simple; however, the correct and safe use of each tool will be stressed.

It is expected that the program will serve as a basis for future motivation and inquiry into the world of industrial arts activities and give the student another outlet for creativity and achievement.

ELEMENTARY SCOPE AND SEQUENC

KINDERGARTEN	GRADE ONE	GRADE TWO	GRADE THREE
1. TO ENABLE THE CHILD TO EXPRESS HIMSELF APPROPRIATELY TO MATURITY AND GROWTH PERIOD UNIQUE TO HIMSELF.	1. To enable the child to express himself appropriately to maturity and growth period unique to himself.	1. To enable the child to express himself appropriately to maturity and growth period unique to himself.	1. To enable the child to ex himself appropriately to mat and growth period unique to self.
2. TO INTRODUCE CONCEPT OF COLOR DEALING WITH BASIC HUES: RED, YELLOW, BLUE, GREEN, ORANGE, PURPLE, BLACK, BROWN.	2. To introduce concept of color dealing with basic hues: red, yellow, blue, green, orange, purple, black, brown.	2. To introduce concept of color dealing with basic hues: red, yellow, blue, green, orange, purple, black, brown, PINK, TAN, GRAY — AND VALUES OF LIGHTNESS OR DARKNESS.	2. To introduce concept of dealing with hues — red, y blue, green, orange, purple, brown, pink, tan, gray - VAL AND INTENSITIES OF BRI NESS OR DULLNESS.
3. TO DEVELOP VISUAL AWARENESS OF SHAPE AND SIZE.	3. To develop visual awareness of shape and size.	3. To develop visual awareness of shape and size . . . WITH DETAILS ASSUMING MORE IMPORTANCE.	3. To develop visual awarene shape, size and details SENSE OF PROPORTION REALISM.
4. TO DEMONSTRATE PROPER USES OF ART MATERIALS AND TOOLS. FINGER PAINTING TEMPERA CRAYON CLAY MODELING PAPER PRINTING CHALK CONSTRUCTIONS PAPIER MACHE SCRAPS YARN & STRING *WOOD *PLASTICS *PRINTING	4. To demonstrate proper uses of materials and tools Finger Painting Tempera Crayon Clay Modeling Paper Printing Chalk Constructions Papier Mache Scraps Yarn & String *Wood *LEATHER *Printing	4. TO DEMONSTRATE EXTENDED USE OF MATERIALS AND ADDED RESPONSIBILITY OF CARE IN Finger Painting Tempera Crayon Clay Modeling Paper Printing Chalk Constructions Papier Mache Scraps Yarn & String SAWDUST PAPER SCULPTURE *Wood *METAL *Printing	4. To demonstrate extended us materials and added responsi of care in: Finger Painting Tempera Clay Modeling Paper Printing Chalk Constructions Papier Mache Scraps Yarn & String Sawdust Paper Sculpture PLASTER WATER COLOR *Wood *Leather *Printing
5. TO DEVELOP CONTROL OF LARGE MUSCLES.	5. To develop control of large muscles.	5. To develop control of large muscles, WITH SOME SMALL MUSCLE ACTIVITY.	5. To continue development of cular control with added muscle development.
6. TO PROVIDE EXPERIENCES LEADING TO PUPIL AWARENESS OF EXHIBITS AND DISPLAYS.	6. To provide experiences leading to pupil PARTICIPATION of exhibits and displays.	6. To provide experiences for pupil participation in the PLANNING AND EXECUTING OF exhibits, displays, AND BULLETIN BOARDS.	6. To provide experiences for participation in planning and cuting exhibits, displays, bu boards and DIORAMAS W AN AWARENESS OF SPA RELATIONSHIPS.
7. TO BUILD AND MAINTAIN THE CREATIVE RESPONSE OF CHILDREN TO THEIR ENVIRONMENT.	7. To build and maintain the creative response of children to their environment.	7. To build and maintain the creative response of children to their environment.	7. To build and maintain the tive response of children to environment.
8. TO INCLUDE THE CLASSROOM AND SCHOOL ENVIRONMENT IN BUILDING RELATIONSHIPS THROUGH MEANINGFUL ART EXPERIENCES.	8. To include the classroom and school environment in building relationships through meaningful art experiences.	8. To include the classroom and school environment in building relationships through meaningful art experiences . . . WITH INCREASED CORRELATION OF ART WITH OTHER CURRICULUM ACTIVITIES.	8. To include the classroom school environment in buil relationships through meanin art experiences . . . with inc ed correlation of art with curriculum activities.
9. TO DEVELOP CRITERIA FOR SELF-EVALUATING ART PRODUCTS IN RELATIONSHIP TO ONESELF.	9. To develop criteria for self-evaluating art products in relationship to oneself.	9. To develop criteria for self-evaluating art products in relationship to oneself.	9. To develop criteria for self-eva ting art products in relation to oneself.
10. TO AID THE CHILD IN RELATING HIMSELF TO THE CLASSROOM PEER GROUP WITHIN THE FRAMEWORK OF A GROUP SITUATION.	10. To aid the child in relating himself to the classroom peer group within the framework of a group situation.	10. To aid the child in relating himself to the classroom peer group within the framework of a group situation.	10. To aid the child in relating self to the classroom peer g within the framework of a g situation IN A VARIETY GROUP PROJECTS.
11. TO HELP CHILD SEE THE RELATIONSHIP OF ART TO DAILY LIVING.	11. To help child see the relationship of art to daily living.	11. To help child see the relationship of art to daily living.	11. To help child see the relation of art to daily living.

Capitals indicate concepts new to grade level.
**Refer to Elementary Constructions Guide (Art Guide Supplement)*

D SEQUENCE OF PROJECT OBJECTIVES

GRADE THREE	GRADE FOUR	GRADE FIVE	GRADE SIX
enable the child to express mself appropriately to maturity d growth period unique to himlf.	1. To enable the child to express himself in a manner which is appropriate to his maturity and the growth period unique to himself.	1. To enable the child to express himself in a manner which is appropriate to his maturity and the growth period unique to himself.	1. To enable the child to express himself in a manner which is appropriate to his maturity and the growth period unique to himself.
introduce concept of color aling with hues — red, yellow, ue, green, orange, purple, black, own, pink, tan, gray - VALUES D INTENSITIES OF BRIGHTESS OR DULLNESS.	2. To extend concept of color dealing with hues — red, yellow, blue, green, orange, purple, black, brown, pink, tan, gray — values, intensities, SHADOWS, WARMTH AND COOLNESS OF COLOR TONES AND AWARENESS OF PERSONAL RESPONSE TO COLOR.	2. To extend concept of color dealing with hues — red, yellow, blue, green, orange, purple, black, brown, pink, tan, gray — values, intensities, shadows, warmth and coolness of color tones, MOODS AND FEELINGS.	2. To extend concept of color dealing with hues — red, yellow, blue, green, orange, purple, black, brown, pink, tan, gray — values, intensities, shadows, warmth and coolness of color tones, moods, and feelings.
develop visual awareness of ape, size and details with ENSE OF PROPORTION AND EALISM.	3. To extend a sense of visual awareness concerning shape, size and details with a sense of proportion and realism AND A FEELING OF ACTION.	3. To extend a sense of size, shape, detail, proportion, realism, a feeling of action, SIMPLE PERSPECTIVE, TEXTURE, SHADING AND PATTERNS OF LIGHT AND DARK.	3. To extend a sense of size, shape, detail, proportion, realism, a feeling of action, simple perspective and texture. Shading and patterns of light and dark in his PAINTINGS AND DESIGNS BECOMING MORE NOTICEABLE.
demonstrate extended use of aterials and added responsibility care in: Finger Painting Tempera Clay Modeling Paper Printing Chalk onstruction Papier Mache Scraps Yarn & String Sawdust Paper Sculpture PLASTER WATER COLOR Wood Leather Printing	4. To increase variety of art materials, more responsibility for care of and preparation of materials in: Finger Painting Tempera Clay Modeling Paper Printing Chalk Constructions Papier Mache Scraps Yarn & String Sawdust Plaster Paper Sculpture Water Color CHARCOAL *Wood *Metal *Plastics *Printing	4. To increase variety, responsibility for care of and preparation of materials in: Finger Painting Tempera Clay Modeling Paper Printing Chalk Constructions Papier Mache Scraps Sawdust Plaster Yarn & String Paper Sculpture Water Color Charcoal *Wood *Plastics *Leather *DRAWING *Printing	4. To increase variety and responsibility for the care of and preparation of materials in: Finger Painting Tempera Clay Modeling Paper Printing Chalk Constructions Papier Mache Scraps Sawdust Plaster Yarn & String Paper Sculpture Water Color Charcoal *Wood *Metal *Drawing *Printing
continue development of muslar control with added small uscle development.	5. To continue development of muscular control with added small muscle development.	5. To continue development of muscular control with added small muscle development and CO-ORDINATION BETWEEN EYE AND HAND.	5. Continued growth of large and small muscle dexterity with continued emphasis on coordination between eye and hand.
provide experiences for pupil articipation in planning and executing exhibits, displays, bulletin oards and DIORAMAS WITH N AWARENESS OF SPATIAL ELATIONSHIPS.	6. To provide experiences for pupils to ASSUME MAJOR RESPONSIBILITY IN planning and executing exhibits, displays, bulletin boards and dioramas with an awareness of spatial relationships.	6. To provide experiences for pupils to assume major responsibility in planning and executing exhibits, displays, bulletin boards and dioramas with an awareness of spatial relationships.	6. To provide experiences for pupils to assume major responsibility and participation in planning and executing exhibits, displays, bulletin boards and dioramas with an awareness of spatial relationships.
build and maintain the creave response of children to their nvironment.	7. To build and maintain the creative response of children to their environment.	7. To build and maintain the creative response of children to their environment WITH CONTINUED GROWING EMPHASIS ON CREATIVENESS.	7. To build and maintain the creative response of children to their environment with continued growing emphasis on creativeness.
include the classroom and hool environment in building lationships through meaningful rt experiences . . . with increasd correlation of art with other urriculum activities.	8. To include the classroom and school environment in building relationships through meaningful art experiences . . . with increased correlation of art with other curriculum activities.	8. To include the classroom and school environment in building relationships through meaningful art experiences with increased correlation of art with other curriculum activities and INDIVIDUALIZED PROJECTS EMERGING.	8. To include the classroom and school environment in building relationships through meaningful art experiences with increased correlation of art with other curriculum activities and individualized projects emerging.
develop criteria for self-evaluang art products in relationship oneself.	9. To develop criteria for self-evaluating art products in relationship to oneself AND TO HIS ENVIRONMENT.	9. To develop criteria for self-evaluating art products in relationship to oneself and to his environment.	9. To develop criteria for self-evaluating art products in relationship to oneself and to his environment.
aid the child in relating himelf to the classroom peer group thin the framework of a group tuation IN A VARIETY OF ROUP PROJECTS.	10. To aid the child in relating himself to the classroom peer group within the framework of a group situation in a variety of group projects.	10. To aid the child in relating himself to the classroom peer group within the framework of a group situation in a variety of group projects.	10. To aid the child in relating himself to the classroom peer group within the framework of a group situation in a variety of group projects.
help child see the relationship art to daily living.	11. To help child see the relationship of art to daily living.	11. To help child see the relationship of art to daily living.	11. To help child see the relationship of art to daily living.

ELEMENTARY SCOPE AND SEQUENCE O

KINDERGARTEN	GRADE ONE	GRADE TWO	GRADE THREE
"An Awareness of Art"	**"The Field of Art"**	**"The Art Product, Heritage, History"**	**"The Artist"**
1. DEVELOP AN AWARENESS OF ART AND ITS PLACE IN MAN'S HISTORY. 2. TO DEVELOP AN AWARENESS OF THE RELATIONSHIP OF ART TO DAILY LIFE. 3. DEVELOP DEGREE OF EMPATHY WITH ARTISTS BY EXPOSURE TO: MEDIAS TOOLS ART PRODUCTS ARTISTS 4. BEGIN TO DEVELOP A SET OF PERSONAL CRITERIA OF ACCEPTANCE OF AN ART PRODUCT.	1. TO EXTEND THE CONCEPT OF "ART" AND ITS PLACE IN HISTORICAL DEVELOPMENT OF MAN. 2. To develop an awareness of the relationship of art to daily life. 3. TO DEVELOP UNDERSTANDING OF THE ARTIST AND HIS METHODS OF PROBLEM SOLVING. 4. TO DEVELOP AN AWARENESS OF THE MANY FACETS OF "THE FIELD OF ART" HISTORICAL ORIGIN OF ARTIST PRIMITIVE PRESENT TYPES OF ARTISTS PAINTERS SCULPTORS ARCHITECTS ARTIST'S TRAINING SELF-TAUGHT STUDY FROM GREAT TEACHERS ART SCHOOLS WHERE ARTIST WORKS HOME SPECIAL SCHOOLS FROM NATURE ARTISTS MATERIALS AND TOOLS/SCHOOL ART MEDIA AND TOOLS: FINGER PAINTING TEMPERA CRAYON CLAY MODELING PAPER PRINTING CHALK CONSTRUCTIONS YARN & STRING PAPIER MACHE SCRAPS WOOD LEATHER PRINTING ARTIST'S DISPLAY AREAS HOMES MUSEUMS GALLERIES 5. Begin to develop a set of personal criteria of acceptance of an art product.	1. To extend concept of "art" and its place in historical development of man. 2. To develop an awareness of the relationship of art to daily life. 3. TO DEVELOP AN AWARENESS OF THE DIFFERENT FORMS OF ARTISTIC EXPRESSION — THEIR FUNCTIONAL AND AESTHETIC VALUES. PAINTING SCULPTURE ARCHITECTURE DECORATIVE ARTS WEAVING TAPESTRIES FABRICS RUG MAKING BASKETRY POTTERY ILLUMINATIONS FURNITURE 4. TO INTRODUCE THE AWARENESS OF THESE ART FORMS IN A HISTORICAL PERSPECTIVE INCLUDING: ANCIENT ART MODERN ART 5. CONTINUE to develop a set of personal criteria of acceptance of art products.	1. To develop concept of "ar its place in historical devel of man. 2. To develop an awareness relationship of art to dai 3. TO INTRODUCE ARTIST PEOPLE REPRESENTIN JOR ART FORMS. PAINTERS BOTTICELLI LEONARDO DA VIN VAN GOGH RYDER KLEE PICASSO SCULPTORS DONATELLO BUONARROTI HENRY MOORE ARCHITECTS BUONARROTI WRIGHT DECORATIVE ARTIST Weaving and tapestr RAPHAEL CELLINI Pottery and China — Illuminations — Anon Furniture -- HEPPLE SILVER & GOLDSMIT REVERE CELLINI JEWELRY 4. TO INTRODUCE THE VA SAMPLES AND STYLE ART EXPRESSION FROM CIFIC ARTISTS. 5. Continue the development o sonal criteria of acceptan ARTISTS.

Capitals indicate concepts new to grade level.

JENCE OF APPRECIATION OBJECTIVES

GRADE THREE	GRADE FOUR	GRADE FIVE	GRADE SIX
"The Artist" elop concept of "art" and e in historical development . elop an awareness of the ship of art to daily life. TRODUCE ARTISTS AS E REPRESENTING MA- RT FORMS. NTERS TTICELLI ONARDO DA VINCI N GOGH YDER LEE CASSO LPTORS NATELLO ONARROTI ENRY MOORE HITECTS ONARROTI RIGHT ORATIVE ARTISTS eaving and tapestry — RAPHAEL CELLINI ttery and China — uminations — Anonymous rniture -- HEPPLEWHITE LVER & GOLDSMITHS REVERE CELLINI WELRY TRODUCE THE VARIOUS ES AND STYLES OF XPRESSION FROM SPE- ARTISTS. e the development of per- criteria of acceptance of TS.	"The Field of Art" 1. To extend concept of "art" and its place in historical development of man. 2. To develop an awareness of the relationship of art to daily life. 3. To develop understanding of the artist and his problems and methods of problem solving. 4. TO EXTEND the awareness of the many facets of the "field of art." Historical origin of artist Primitive Present Types of artist Painters Sculptures Architects Decorative Arts CRAFTSMEN Artist's training Self-taught Study from great teachers Art Schools Where artist works Home Special Schools Outdoors OFFICE (BUSINESS & INDUSTRIAL) DESIGN OFFICES Artist's materials and tools/ School Art media and tools: Finger Painting Tempera Crayon Clay Modeling Paper Printing Chalk Constructions Yarn & String Papier Mache Scraps Sawdust Plaster Paper Sculpture Water Color CHARCOAL Wood Metal Plastics Printing ARTIST'S SPECIAL TOOLS PAINTER SCULPTOR ARCHITECT WEAVER POTTER GLASS BLOWER SILVER SMITH DESIGNER Artist's display areas Homes Museums Galleries CHURCHES PUBLIC BUILDINGS LOCAL SHOWING 5. EXTENDING the development of personal criteria for the acceptance of the FIELD OF ART.	"The Art Product, Heritage, History" 1. To extend the concept of the correlation of historical events and the development of art serving basic human needs. 2. To develop an awareness of the relationship of art to daily life. 3. To develop EXTENDED awareness of the forms of artistic expression, their functional and aesthetic values. Painting Sculpture Architecture Decorative Arts Weaving Pottery Illuminations Furniture Silver & Goldsmith 4. To EXTEND the awareness of additional Examples of artist's products, periods, schools, and styles in a historical perspective, including: Ancient Art Modern Art RENAISSANCE ART MEDIEVAL ART 5. Extending the development of personal criteria of acceptance of art products.	"The Artist" 1. To extend the concept of the correlation of historical events and the development in the art of serving basic human needs. 2. To develop an awareness of the relationship of art to daily life. 3. TO ACQUAINT CHILDREN WITH ADDITIONAL ARTISTS AND THEIR STYLES REPRESENTING MAJOR ART PERIODS AND PRODUCTS. Painters GIOTTO BRUEGHEL REMBRANDT EL GRECO RENOIR GOYA LARKIN CEZANNE ROUAULT CASSATT CHAGALL MONDRAIAAN MUNCH WOOD ROOD Sculptors Buonarrotti GHIBERTI BARLACH RODIN LIPCHITZ BRANCUSI Architects Buonarrotti Wright GHIBERTI WREN YAMASAKI Decorative Arts Weaving and Tapestry Raphael MARTHA ERPS Pottery, China, Glassware HENRICH WILHELM STIEGEL Illuminations Furniture Hepplewhite DUNCAN PHYFE CHIPPENDALE Silver and Goldsmith Revere Cellini 4. Extending the development of personal criteria of acceptance of art products.

KINDERGARTEN

WOOD

1. Yarn Frame
2. Freeform Scrap Construction

PLASTIC

1. Plastic Pin

Kindergarten

Area: Wood

Project: Yarn Frame

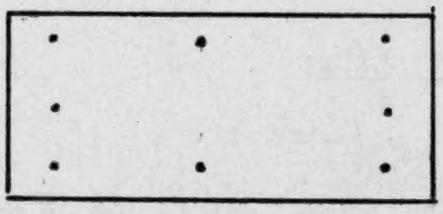
Objectives:

To be able to:
- select stock
- sand with grain of wood
- sand end grain of wood
- draw parallel lines
- start a nail
- pound a nail
- apply wax finish

Materials and Tools:

1 x 6 x 6 White Pine (pre-cut)
8 - 6d casing nails
80 grit abrasive paper
scrap pieces for sanding blocks
liquid floor wax
ruler
11½ or 12 oz. claw hammer

Operation:



1. Select stock
2. Sand with grain (use sanding block)
3. Sand end grain (use sanding block)
4. Draw lines parallel to edge (½")
5. Lay out place for center nail
6. Set and pound nails, one in each corner at point where lines intersect and one at center point of each edge
7. Reverse board and drive protruding nails back flush with bottom of board
8. Apply two coats of wax to project. Let dry between coats.

Variations of above project:

Have free form shape with nails spaced around edge.

Kindergarten

Area: Wood

Project: Freeform Scrap Construction

Objectives:

To be able to:
select stock
sand with grain of wood
sand end grain of wood
start a nail
pound a nail
glue two pieces of wood together

Materials and Tools:

1 piece of 1" stock (any shape) approximately 40 or 50 square inches in size

Several pieces of odd shaped scraps (any thickness or size)

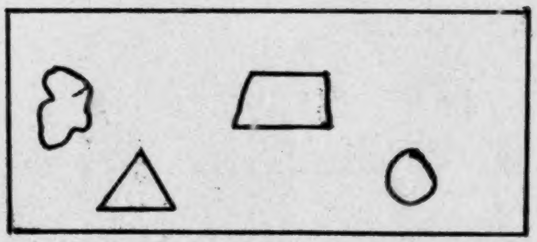
Assortment of various size brads and small nails

White glue (Elmer's or Wilhold)

100 grit abrasive paper

Sanding block

Claw hammer



Operation:

1. Select stock
2. Sand flat surfaces of stocks using sanding block
3. Sand edges of all pieces
4. Glue and nail small pieces of wood to the large board
   - a. Start nails in small pieces of wood
   - b. Apply spot of glue to back of small piece of wood
   - c. Put in place on the large piece
   - d. Pound nails in flush with top piece of wood

Kindergarten

Area: Plastics

Project: Plastic Pin

Objectives:

To be able to:

1. Sand a flat surface.
2. Smooth plastic wool
3. Polish with tooth paste
4. Cement findings to plastic

Materials and Tools:

Pre-cut plastic

Shapes

Pins (findings)

Sandpaper

Steel wool

Toothpaste

Plastic cement

Note for teacher: glue sheet of sandpaper on a flat board for sanding flat surfaces.

Operation:

1. Sand the large flat surfaces by placing the plastic on a flat sanding surface and moving the plastic back and forth.
2. Then smooth the plastic by rubbing with steel wool.
3. Polish by placing the plastic on a damp cloth which is on a flat surface. Put a small amount of toothpaste on the flat side of plastic and rub with back and forth motion.
4. Place plastic pin face down, apply plastic cement to pin (finding) and position on pin. Let dry overnight.

GRADE 1

WOOD

1. Cheese Cutting Board
2. Trivet (hot pad)

LEATHER

1. Bookmark

Grade 1

Area: Wood

Project: Cheese Cutting Board

Objectives:

To be able to:
- measure and mark stock
- square line across board
- use board and vise
- use cross cut saw
- file and grain
- layout round corners
- file convex edge
- dust project
- apply olive oil finish

Materials and Tools:

- 1 piece - 1" x 4" x 12" softwood (pine preferable)
- olive oil
- 80 grit abrasive paper
- 120 grit abrasive paper
- ruler
- try square
- coping saw
- cross cut saw
- 8" flat cabinet file
- sanding block
- pencil

Operations:

1. Select stock
2. Measure 10" length
3. Square line across
4. Use cross cut saw and saw to length
5. File ends smooth
6. Layout round corners (trace around small jar cover or coin)
7. File corners (with the grain)
8. Sand long edges with the grain with 80 grit abrasive paper

Cheese Cutting Board, Con't.

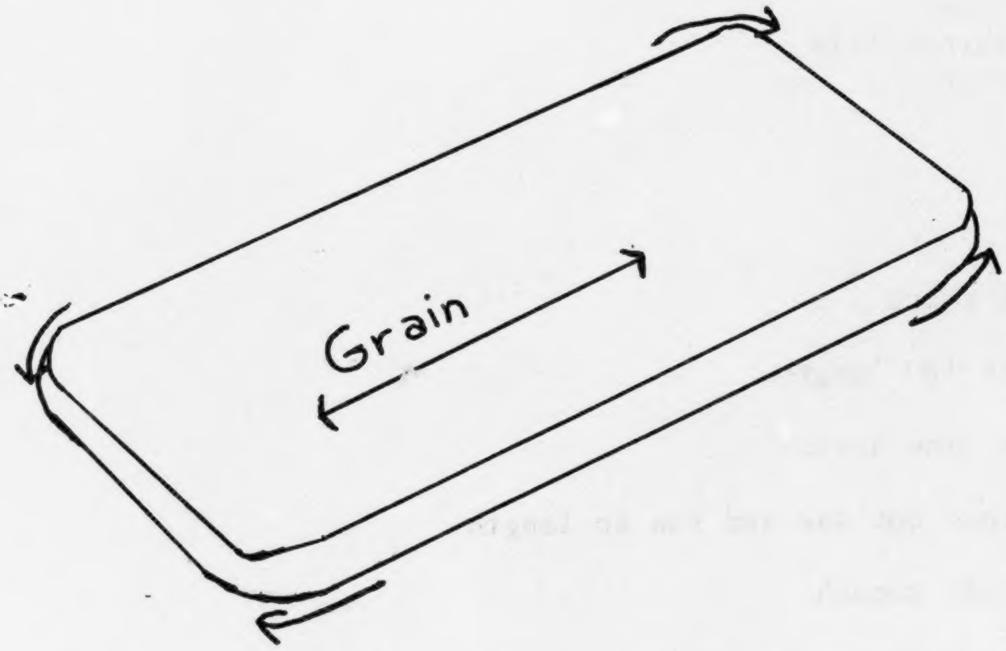
9. Sand flat end (one direction) with 80 grit abrasive paper
10. Sand corners (with the grain) with 80 grit abrasive paper
11. Repeat steps 8, 9, and 10 with 120 grit abrasive paper
12. Dust project with cloth
13. Apply olive oil finish by rubbing in well with fingers
14. Let dry over night
15. Repeat steps 13 and 14

Project: Cheese Cutting Board

Required stock: 1" x 4" x 10"

File corners with the grain, as arrows indicate

Round 4 corners to ½" radius



Grade 1

Area: Wood

Project: Trivet (hot pad)

Objectives:

To be able to:
- measure and mark stock
- square line across board
- use board and vise
- use cross cut saw
- file and grain
- cut asbestos tile
- attach furniture glides
- apply food color stain

Materials and Tools:

- 1 piece approximately 5" square (white pine preferable)
- 4 - ½" rubber tack bumpers
- 1 piece approximately 5 x 5 cork or asbestos tile
- food coloring
- waterlox (transparent)
- glue (white-Elmer's)
- 80 grit abrasive paper
- 120 grit abrasive paper
- cross cut saw
- claw hammer
- flat file

Operations:

1. Select stock
2. Measure and mark length (to match width of board - makes a square)
3. Square line across at mark
4. Saw off with cross cut saw
5. File ends of board smooth
6. Sand face of board (with grain)
7. Sand edges with grain
8. Sand ends of board
9. Trace size of trivet base board onto asbestos tile
10. Cut tile to size

Trivet (hot pad), Con't.

11. Apply glue to the top face of the board and put tile in place

12. Weight down with books until glue is dry (over night). Be sure to put a piece of wax paper between project and books.

13. Pound in one furniture glide in each bottom corner

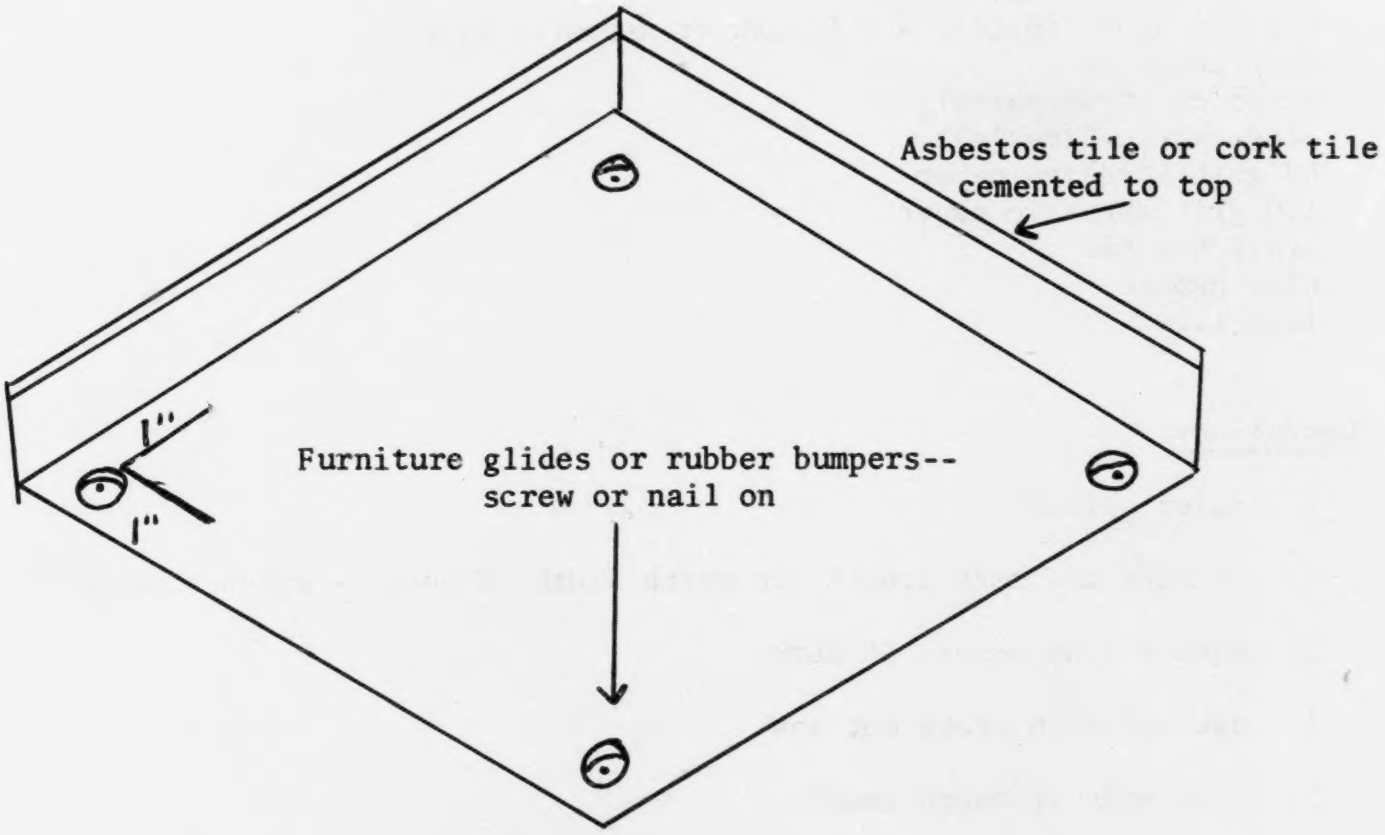
14. Dilute food coloring with water and use as a stain on the edges of the trivet (six cups to one cup)

15. Apply one coat of finish with a cloth to the wood (waterlox)

16. Let dry over night

Project: Trivet (hot pad)

Required stock: 1" x 6" x 6"



Asbestos tile or cork tile cemented to top

Furniture glides or rubber bumpers--screw or nail on

bottom view

Furniture glides at each corner, set 1" in from each side of corner.

Grade 1

Area: Leather

Project: Bookmark

Objectives:

To be able to:
- prepare leather for tooling by moistening
- transfer a design by tracing
- follow the proper procedure in tooling leather
- apply a finish to the leather

Materials and Tools:

- 1½" x 5" leather (est. 5¢)
- sponge
- nail
- paper clips
- shoe wax

Operation: (Preparation by teacher: cut 1" square on paper cutter)

1. Pupil will write initial on (square) until acceptable

2. Pupil will apply pencil texture to back of square

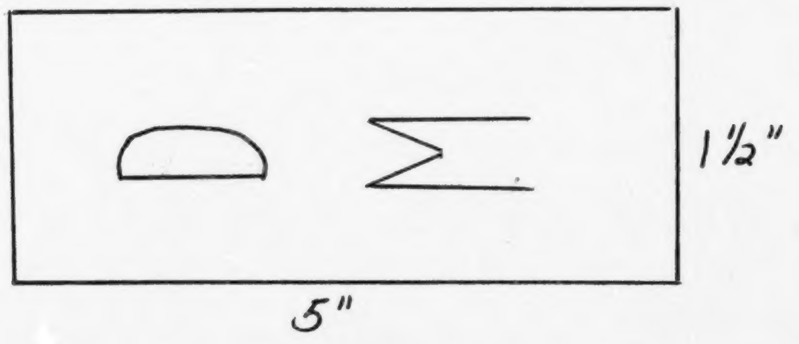
3. Lay the leather on a wet sponge with smooth side of leather up. Leather must remain on sponge until front begins to darken. (Speed up process by pushing down on leather.)

4. Place square with initial on smooth side of leather - trace initial - do not let paper shift - hold in place with paper clips on corners. Remove the paper clips.

5. Trace (tool) the initial on the leather using the nail as a scribe.

6. Let dry naturally 2 days. Neutral shade paste.

7. Apply finish wax (just as you would on shoes - shoe wax)



GRADE 2

WOOD

1. Note Holder
2. Boat

METALS

1. Copper Tooling Picture (using a plaster mold)
2. Chasing a Design on Copper Sheet

Grade 2

Area: Wood

Project: Note Holder

Objectives:

To be able to:
- layout curved line
- use coping saw
- file concave edge

Materials and Tools:

- 1 piece of 1" x 4" x 4" pine
- 1 piece of 1" x 2" x 2" pine
- 1 wood spring type clothes pin
- white glue
- 1 - 4d casing nail
- 80 grit abrasive paper
- 120 grit abrasive paper
- 2 thick rubber bands
- cross cut saw
- coping saw
- ½ rd. file
- claw hammer

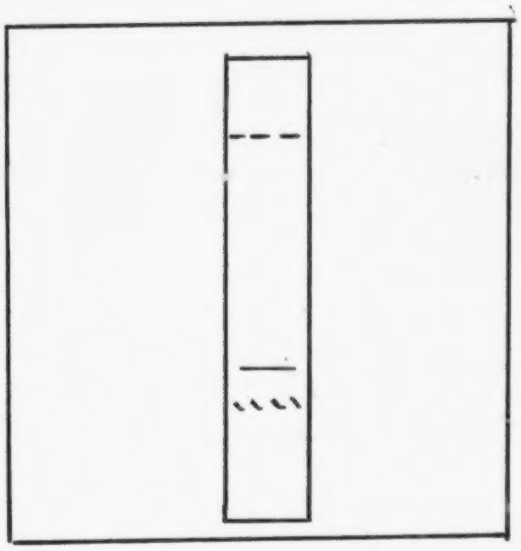
Operations:

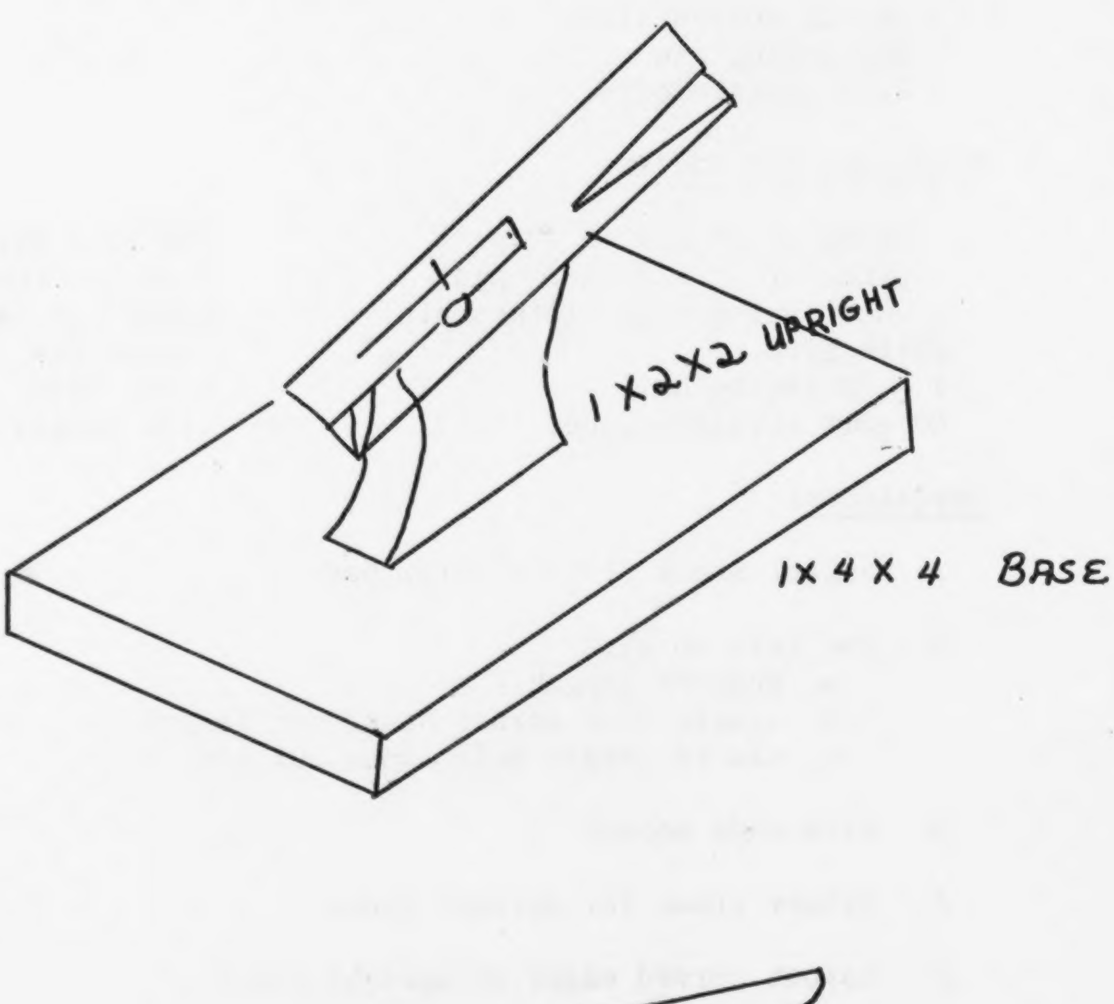
1. Select stock (1" x 4") for base
2. Cut base to size
   a. measure length - 4"
   b. square line across board for length
   c. saw to length with cross cut saw
3. File ends smooth
4. Select stock for upright piece
5. Layout curved edges of upright piece
6. Use coping saw to saw out upright piece
7. File concave edges smooth (use ½ round file)
8. Sand all parts with 80 grit abrasive paper
9. Sand over all parts with 120 grit abrasive paper
10. Pound nail through center bottom of board so it protrudes through above 1/8"
11. Apply glue to bottom surface of upright piece
12. Clamp upright piece in vise, glued edge up
13. Center the base board on upright piece and pound nails in flush with surface of board.
14. Apply glue to top surface of upright piece.
15. Place wood (spring-type) clothes pin in place and hold in place with two rubber bands.

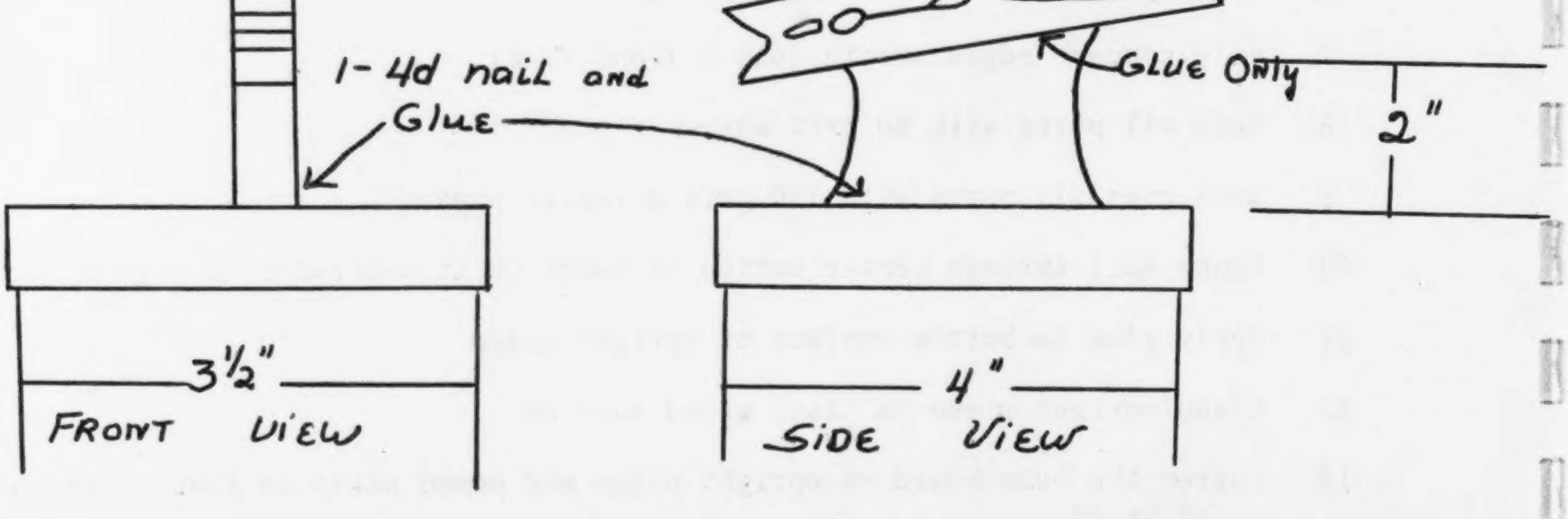
Note Holder, Con't.

Project: Note Holder

Required stock: 1" x 4"
spring type clothes pin




1 X 2 X 2 UPRIGHT
1 X 4 X 4 BASE


1- 4d nail and Glue
Glue Only
2"
3½"
FRONT VIEW
4"
SIDE VIEW

Grade 2

Area: Wood

Project: Boat

Objectives:

To be able to:
- trace a template
- use a hand drill
- use oil base paint

Materials and Tools:

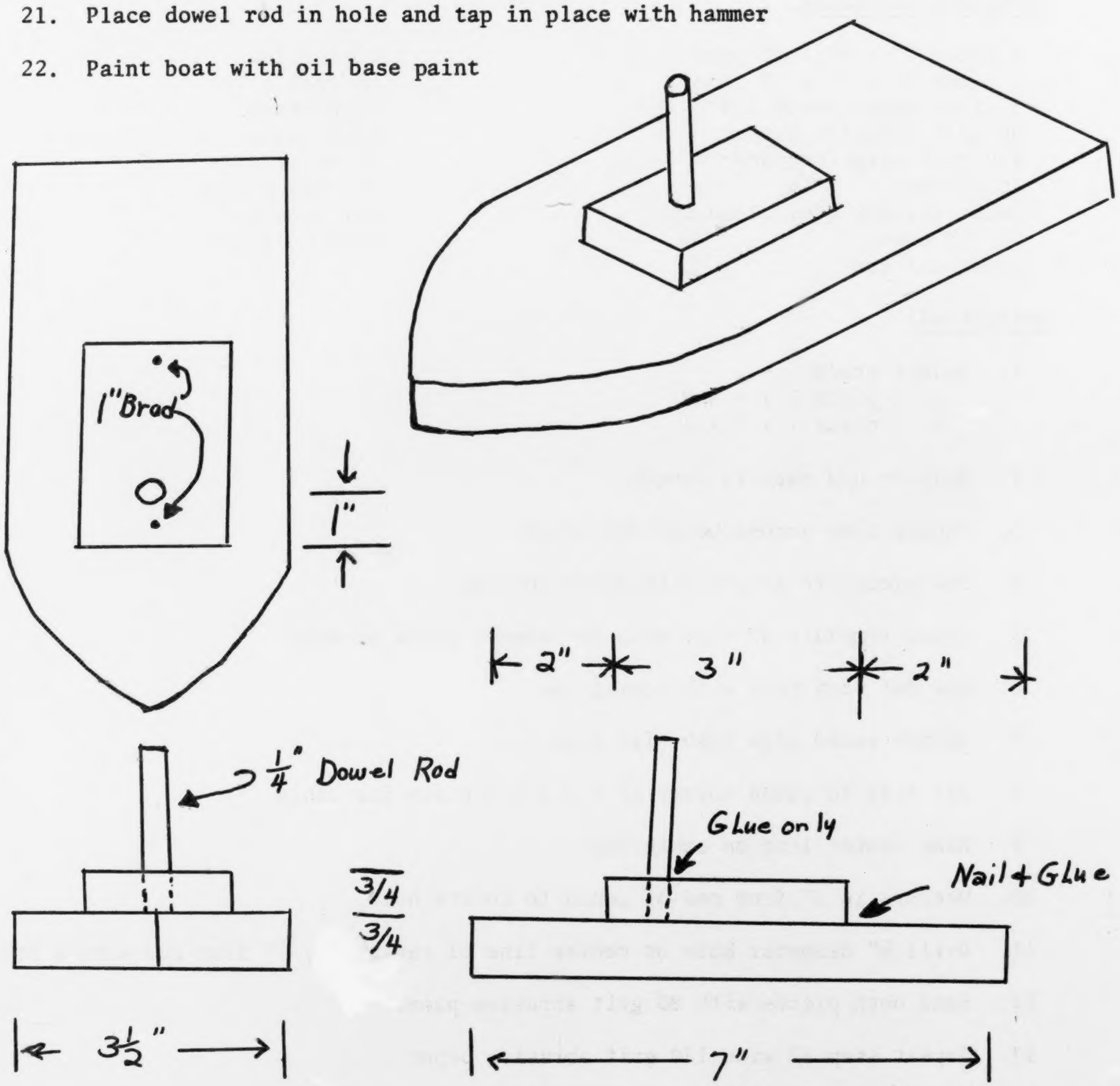
1 piece 1" x 4" x 7" pine
1 piece 1" x 2" x 3" pine
1 piece dowel rod ¼ x 4"
80 grit abrasive paper
120 grit abrasive paper
1" brushes
paint thinner (for clean up)
2 - 1" brads
cross-cut saw
coping saw
8" flat file
claw hammer
hand drill
½" twist drill bit
12" bench rule
try square
boat hull template

Operations:

1. Select stock
   a. 1 piece 1 x 4 x 7
   b. 1 piece 1 x 2 x 3
2. Measure and mark to length
3. Square line across board for length
4. Saw pieces to length with cross cut saw
5. Trace template of boat hull on largest piece of wood
6. Saw out boat hull with coping saw
7. Smooth sawed edge with flat file
8. Use file to round corner of 1 x 2 x 3 piece for cabin
9. Draw center line on cabin top
10. Measure in 1" from end of cabin to locate hole
11. Drill ¼" diameter hole on center line of cabin top, 1" from end with a hand drill
12. Sand both pieces with 80 grit abrasive paper
13. Repeat step 12 with 120 grit abrasive paper
14. Pound 2 - 1" brads into top of cabin, one in the center of each end

Boat, Con't.

15. Apply small amount of glue to cabin bottom
16. Place cabin in the center of hull and pound nails in, flush with wood
17. Measure ¼" dowel rod to 4" length
18. Saw dowel rod to length with coping saw
19. Sand end of dowel rod with 120 grit abrasive paper
20. Put spot of glue in hole in cabin top
21. Place dowel rod in hole and tap in place with hammer
22. Paint boat with oil base paint


1"Brad
1"
2"
3"
2"
$\frac{1}{4}$" Dowel Rod
Glue only
Nail + Glue
3/4
3/4
$3\frac{1}{2}$"
7"

Grade 2

Area: Metals

Project: Copper Tooling Picture (using a plaster mold)

Objectives:

To be able to:
- measure and mark metal
- cut copper foil with scissors
- use a modeling tool (pointed dowel rod)
- use steel wool to polish and clean metal
- use liver of sulphur solution for antiquing
- bend sheet metal
- use a mold
- paint metal

Materials and Tools:

- 4" x 4" - 36 gauge soft copper foil
- 1 4/0 steel wool
- liver of sulphur
- fixative spray
- masking tape
- soft clay
- ¼" x 5" sharpened dowel rod
- plastic molds

Operations:

1. Select design (plaster mold)
2. Measure and mark copper foil (4" x 4")
3. Cut copper foil to size with teacher's scissors
4. Select modeling tool (sharpened piece of ¼" x 5" dowel rod)
5. Tape copper foil on top side of plastic mold so it will not move around while being worked (use masking tape)
6. Use sharpened end of modeling tool (dowel rod) to work copper into mold
   A. Start with light pressure going over entire design (rubbing)
   B. Repeat with moderate pressure to work copper down into mold
   C. Go over detailed parts of mold with modeling tool until all detail shows clearly
7. Fill depressed area on back side of picture with soft clay
8. Cut a piece of cardboard (tablet back) 3½" square
9. Center copper sheet over cardboard back and fold surplus copper over edge to lock back in place

Copper Tooling Picture, Con't.

10. Clean the face of copper with 4/0 steel wool
11. Dissolve liver of sulphur crystals in cold water
12. Apply liver of sulphur solution to copper with steel wool (same piece used in Step 10)
13. Rinse thoroughly with clear water
14. Stand copper on edge and let dry
15. Steel wool background very lightly
16. Steel wool raised areas to produce highlights (very bright and shiny areas)
17. Spray surface with a clear finish (fixative as used for chalk pictures)

Grade 2

Area: Metals

Project: Chasing a Design on Copper Sheet

Objectives:

To be able to:
- measure and mark metal
- bend sheet metal
- transfer design with carbon paper
- paint metal
- file metal
- chase design
- use a chasing hammer

Materials and Tools:

- 4" x 4" - 28 or 30 gauge soft copper sheet
- carbon paper
- masking tape
- 4/0 steel wool
- fixative
- cloth
- old magazines
- small hammer
- 8d common nails
- flat file

Operations:

1. Select design
2. Measure and mark the size on the copper sheet (4" x 4")
3. Trace over design to transfer to metal
4. Remove design and carbon paper
5. File off the point of a nail (8d common) until the end is smooth
6. Place copper on a magazine, design up
7. Use hammer and tap nail lightly, following the design on the copper
    - A. space nail marks evenly (approximately 1/8" apart)
    - B. depressions from the nail should be approximately 1/16" deep
8. Cut a piece of cardboard (tablet back) 3½" square
9. Center copper sheet over cardboard back and fold surplus over edge to lock on side of cardboard

Chasing a Design on Copper Sheet, Con't.

10. Steel wool the face of the copper to produce highlights (should be very shiny)

11. Dust off with a cloth

12. Spray lightly with any of the following to prevent oxidation of the copper
    A. clear lacquer
    B. clear crylon
    C. fixative (same as used for chalk drawing)

GRADE 3

WOOD

1. Music or Book Stand
2. Napkin Holder

LEATHER

1. Coasters
2. Leather Design for Napkin Holder

Grade 3

Area: Wood

Project: Music or Book Stand

Objectives:

To be able to:
- use brace and auger bit
- use brace and countersink
- use screw driver
- use "L" hooks
- layout screw holes
- apply varnish

Materials and Tools:

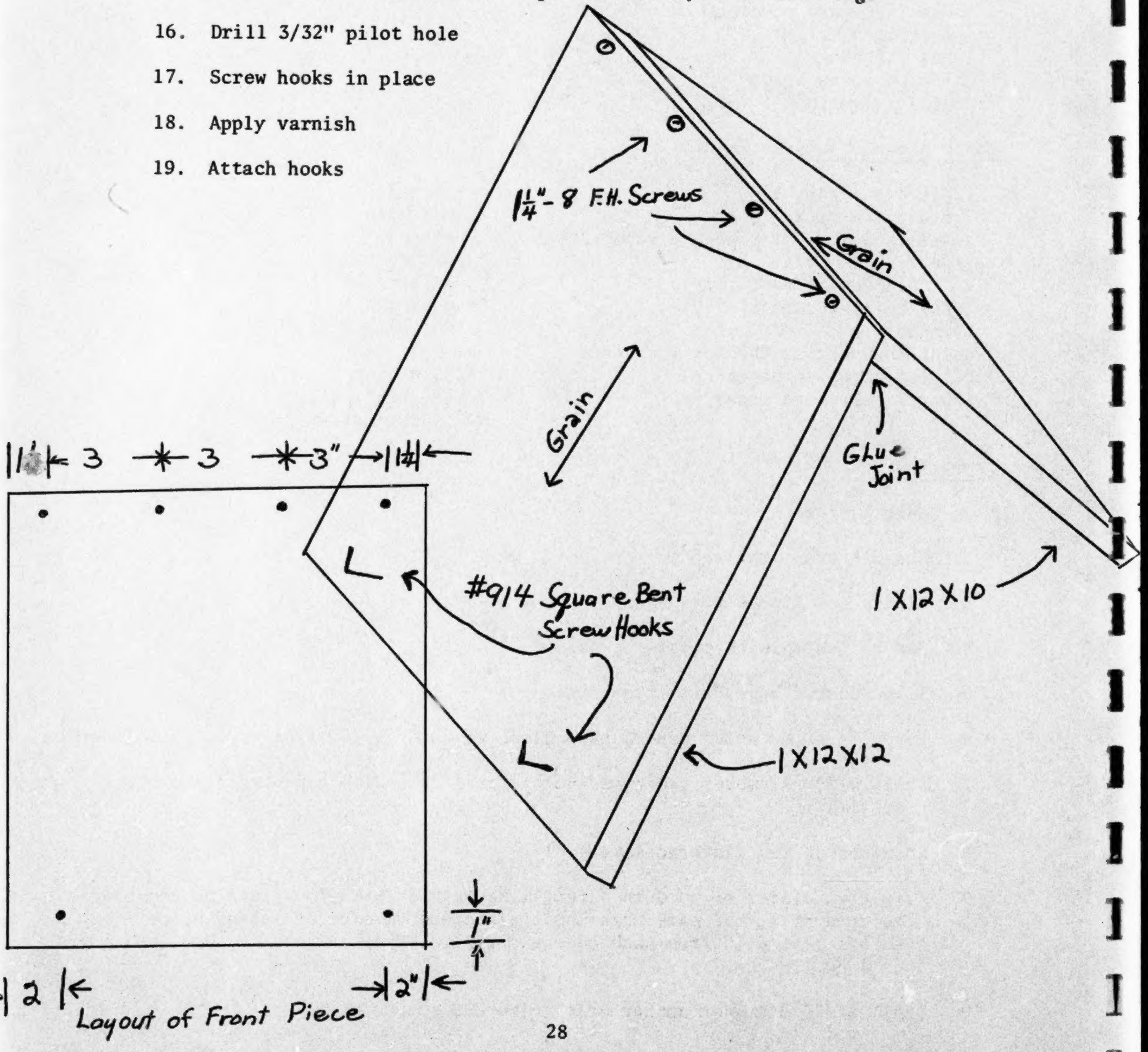
- 1 piece 1 x 12 x 10
- 1 piece 1 x 21 x 10
- 4 - 1¼ x 8 F.H. zinc plated wood screws
- glue
- 2 - #914 square bent screws
- hooks (zinc-chromate - 1")
- varnish
- paint and varnish thinner (cleaner)
- 80 grit abrasive paper
- 120 grit abrasive paper
- 1" brush
- bench rule
- try square
- cross cut saw
- 8" flat file
- hand drill
- 5/32 twist drill bit
- brace
- countersink
- slip joint pliers
- 4" screw driver

Operations:

1. Select stock
2. Measure and mark length
3. Square saw line across boards
4. Saw to length with cross cut saw
5. File ends of board with flat file
6. Layout 4 screw holes on end of 1 piece of wood - 3/8" from edge, spaced evenly
7. Drill 5/32" diameter clearance holes for screws with hand drill and twist drill bit
8. Countersink for flathead screws
9. Align two pieces of wood in a tent-like fashion with the grain of the boards going uphill, and mark screw hole placement on edge of second piece. (2 screws placed 1" from each edge and 2 more screws placed 4" from each edge of wood.)
10. Drill 3/32" diameter anchor hole. (marked second piece)

Music or Book Stand, Con't.

11. Sand both pieces completely with 80 grit abrasive paper
12. Sand both pieces completely with 120 grit abrasive paper
13. Apply glue to butt joint edge
14. Align 2 pieces of wood and screw 1¼ x 8 F.H. zinc plated screws
15. Layout placement of hook 1" up from bottom, 2" in from edge
16. Drill 3/32" pilot hole
17. Screw hooks in place
18. Apply varnish
19. Attach hooks


1¼"- 8 F.H. Screws
Grain
Grain
Glue Joint
#914 Square Bent Screw Hooks
1 X 12 X 10
1 X 12 X 12
1¼ 3 3 3" 1¼
1"
2
2"
Layout of Front Piece

Grade 3

Area: Wood

Project: Napkin Holder

Objectives:

To be able to:
- use ripsaw
- use nail set
- plane edge of wood
- wipe-on finish

Materials and Tools:

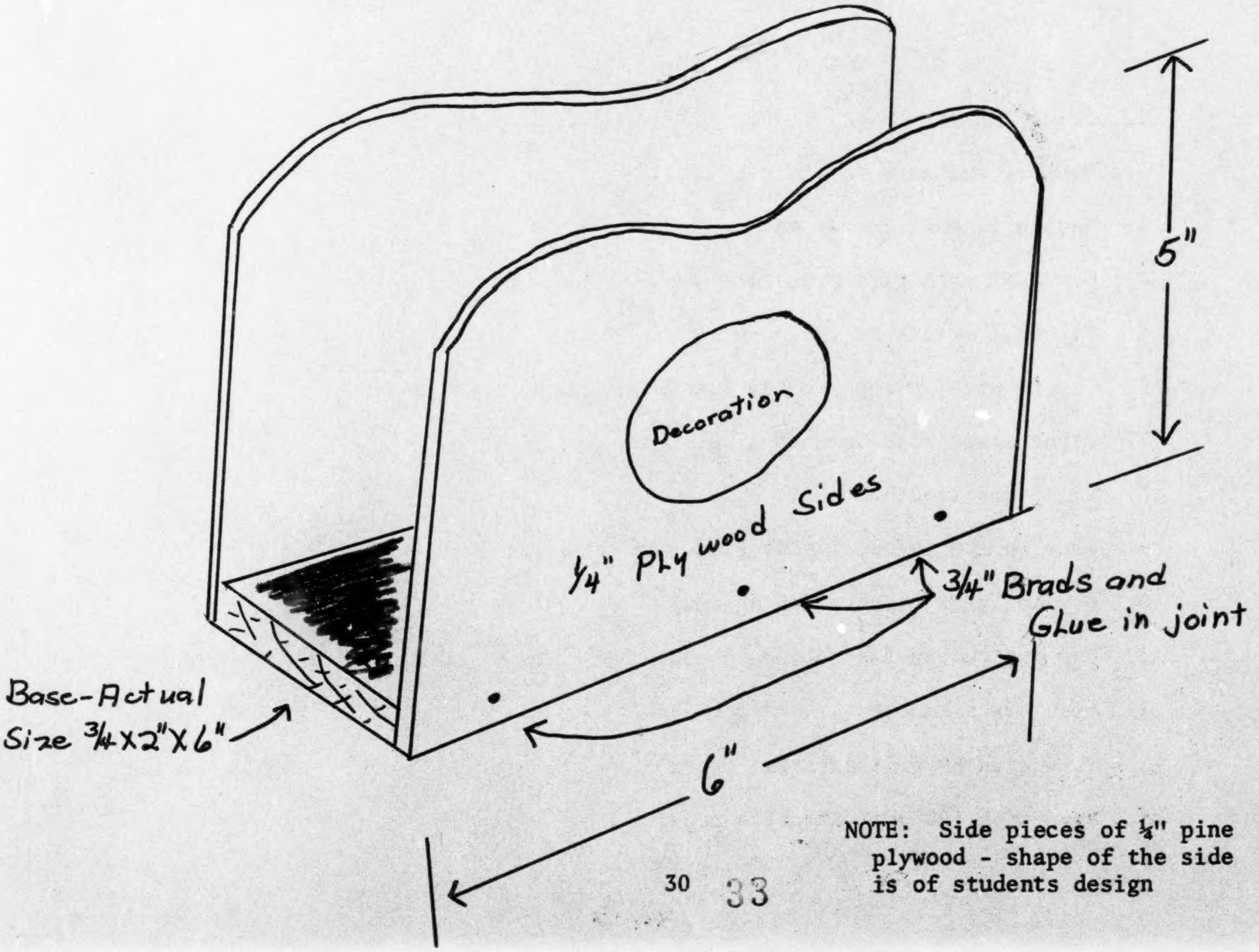
1 piece 1 x 4 x 6 pine
2 pieces ¼ plywood 5 x 6
80 grit abrasive paper
120 grit abrasive paper
6 - 3/4" #16 brads
glue
(decoration from leather area)
waterlox
cloth
cross cut saw
try square
coping saw
bench rule
rip saw
nail set
claw hammer
flat file
smooth plane

Operations:

1. Select stock
2. Measure and mark length - 6"
3. Square line across at mark
4. Saw to length with cross cut saw
5. Layout 2" width of the base
6. Saw to width using rip saw (stay 1/8" away from line)
7. Plane sawed edge down to line
8. File ends smooth
9. Measure and layout 2 side pieces of ¼" plywood
10. Saw out side pieces (coping saw)
11. Lay out curved top corners on each side piece (optional)
12. File edges smooth
13. Sand with 80 grit abrasive paper
14. Sand with 120 grit abrasive paper

Napkin Holder, Con't.

15. Mark placement of 3 - 3/4" brads 3/8" from bottom edge of side pieces spaced at 1" - 3" from side
16. Start nails into wood side pieces with hammer
17. Apply glue to opposite edge of base board
18. Position and nail one side in place
19. Apply glue to opposite edge of base board
20. Position and nail second side in place
21. Set nail by hitting nail set once with hammer
22. Apply decoration to one side of napkin holder - (Suggestion: leather decoration)
23. Apply wipe-on finish with cloth. Note: do not apply finish to leather.


5"
Decoration
1/4" Plywood Sides
3/4" Brads and Glue in joint
Base-Actual Size 3/4 X 2" X 6"
6"

NOTE: Side pieces of ¼" pine plywood - shape of the side is of students design

Grade 3

Area: Leather

Project: Coasters

Objectives:

To be able to:
- transfer a design using a template
- punch holes for lacing
- lace using the whip stitch on a single thickness

Materials and Tools:

1 pre-cut 3½ D. leather piece (15¢ est.)
1 - 3" D. block
nail
sponge
plastic template of design (selection)
neutral shade paste shoe wax
plastic lacing

Operation:

1. Punch holes for lacing approximately 1/8" from edge using guide book

2. Lay the leather on a wet sponge with smooth side of leather up. Leather must remain on sponge until front begins to darken. (Speed up process by pushing down on leather.)

3. Place design on front of leather using template (permanent pattern)

4. Trace (tool) over design on leather - let dry naturally for two days

5. Apply finish - wax on both sides (just as you would on shoes)

6. Lace - using a whip stitch. Finish by going through the two starting holes again and drawing about 1" under the coils on underneath side

Grade 3

Area: Leather

Project: Leather Design for Napkin Holder (1 piece)

Objectives:

To be able to:
transfer a design using a template
glue leather on wood

Materials and Tools:

1 pre-cut 3½ D. leather
plastic template of design (selection)
sponge
nail
neutral shade paste shoe wax
Elmer's glue

Operation:

1. Moisten leather from back (on sponge) until front begins to darken. (see project 1 - #2)
2. Place design on front of leather using template (permanent pattern)
3. Trace (tool) over design on leather - let dry naturally for 2 days
4. Apply finish wax on front only (just as you would saddle soap on shoes)
5. Glue on front of napkin holder project
6. Place weight (a book) on leather until glue is dry (before holder is assembled or place holder over edge of table and apply weight)

GRADE 4

WOOD

1. Tool Box
   Procedure Sheet

2. Bird House
   Procedure Sheet

PLASTIC

1. Key Chain Holder
   Procedure Sheet

2. Earrings
   Procedure Sheet

METALS

1. Candy Dish
   Procedure Sheet

2. Bird Feeder
   Procedure Sheet

Grade 4

Area: Wood

Project: Tool Box

Objectives:

To be able to:
work with manila rope

Materials and Tools:

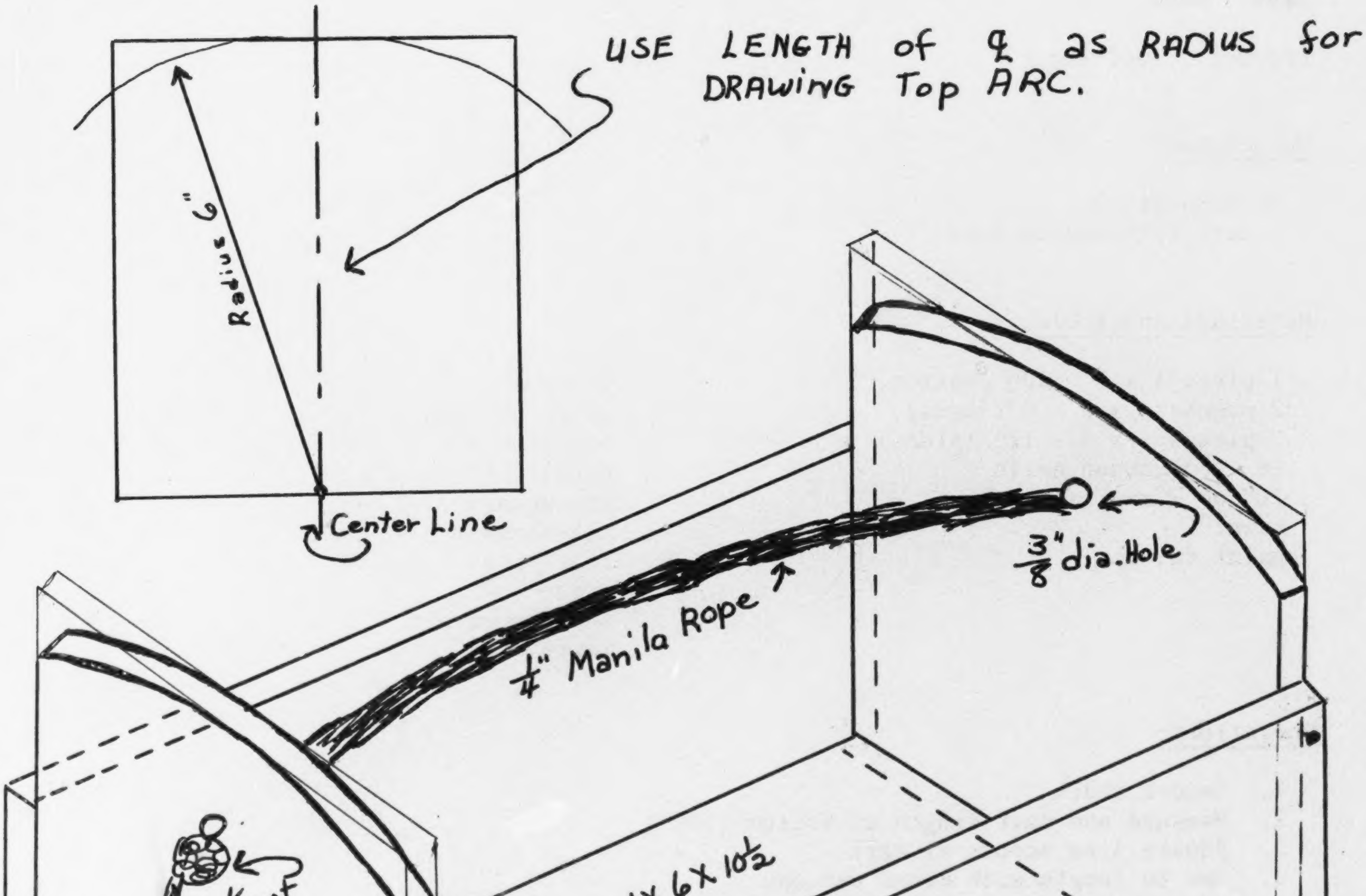
1 piece 1 x 6 - 10½ (bottom)
2 pieces 1 x 6 - 6" (ends)
2 pieces 1 x 4 - 12" (sides)
16 - 6d common nails
18" of ¼ manila rope
paint
paint thinner

1" brush
cross cut saw
bench rule
pencil
try square
claw hammer
flat file
brace
3/8" auger bit
knife

Operations:

1. Select stock
2. Measure and mark length of bottom (10½")
3. Square line across at mark
4. Saw to length with cross cut saw
5. Measure and mark length of both side pieces (12")
6. Square line across at mark
7. Saw sides to length with cross cut saw
8. File ends of these pieces smooth
9. Measure and mark length of end pieces (6")
10. Square line across at mark on each piece
11. Saw to length with cross cut saw
12. Lay out curved top end on each piece
13. Saw curved edge with coping saw
14. File curve smooth
15. Locate and mark hole on end piece 3/4" from top edge on center line
16. Bore 3/8" diameter hole in each end
17. Nail end pieces to ends of bottom piece (2 nails each end)
18. Nail on side pieces
19. Paint box
20. Tie knot close to one end of manila rope
21. Pull rope through holes in end of tool box
22. Tie knot in opposite end of rope
23. Cut off surplus rope (knife)

Tool Box, Con't.


USE LENGTH of ℄ as RADIUS for DRAWING Top ARC.
Radius 6"
Center Line
3/8" dia. Hole
1/4" Manila Rope
Knot
Bottom - 1X6X10 1/2
1X4X12 Sides
6 d Common Nails
5 1/2"

NOTE: All joints glued and nailed

PROCEDURE SHEET

NAME ______________________________

GRADE 4

AREA: WOOD PROJECT: TOOL BOX

SPECIFIC OBJECTIVE: WORK WITH MANILA ROPE

OTHER INFORMATION: SAFETY FIRST

MUST BE ABLE TO:

SELECT STOCK
SAND WITH THE GRAIN OF THE WOOD
SAND END GRAIN OF WOOD
START A NAIL - POUND A NAIL
MEASURE AND MARK STOCK
SQUARE LINE ACROSS BOARD
USE BOARD AND VISE
USE CROSS CUT SAW
FILE END GRAIN
FILE CONVEX EDGE
LAYOUT CURVED LINE
USE COPING SAW
USE OIL BASE PAINT
USE BRACE AND AUGER BIT
PLANE EDGE OF WOOD

MATERIALS AND TOOLS:

1 PIECE 1 x 6 - 10½ (BOTTOM)
2 PIECES 1 x 6 - 6" (ENDS)
2 PIECES 1 x 4 - 12" (SIDES)
16 - 6D COMMON NAILS
18" OF ¼ MANILA ROPE
PAINT
1" BRUSH
PAINT THINNER
CROSS CUT SAW
BENCH RULE
PENCIL
TRY SQUARE
CLAW HAMMER
FLAT FILE
BRACE
3/8" AUGER BIT
KNIFE

OPERATION STEPS:

_____ 1. SELECT STOCK
_____ 2. MEASURE AND MARK LENGTH OF BOTTOM (10½")
_____ 3. SQUARE LINE ACROSS AT MARK
_____ 4. SAW TO LENGTH WITH CROSS CUT SAW
_____ 5. MEASURE AND MARK LENGTH OF BOTH SIDE PIECES (12")
_____ 6. SQUARE LINE ACROSS AT MARK
_____ 7. SAW SIDES TO LENGTH WITH CROSS CUT SAW
_____ 8. FILE ENDS OF THESE PIECES SMOOTH
_____ 9. MEASURE AND MARK LENGTH OF END PIECES (6")
_____ 10. SQUARE LINE ACROSS AT MARK ON EACH PIECE
_____ 11. SAW TO LENGTH WITH CROSS CUT SAW
_____ 12. LAY OUT CURVED EDGE WITH COPING SAW
_____ 13. SAW CURVED EDGE WITH COPING SAW
_____ 14. FILE CURVE SMOOTH
_____ 15. LOCATE AND MARK HOLE ON END PIECE 3/4" FROM TOP EDGE ON CENTER LINE
_____ 16. BORE 3/8" DIAMETER HOLE IN EACH END
_____ 17. NAIL END PIECES TO ENDS OF BOTTOM PIECE (2 NAILS IN EACH END)
_____ 18. NAIL ON SIDE PIECES
_____ 19. PAINT BOX
_____ 20. TIE KNOT CLOSE TO ONE END OF MANILA ROPE
_____ 21. PULL ROPE THROUGH HOLES IN ENDS OF TOOL BOX
_____ 22. TIE KNOT IN OPPOSITE END OF ROPE
_____ 23. CUT OFF SURPLUS ROPE (KNIFE)

Grade 4

Area: Wood

Project: Bird House

Objectives:

To be able to:
- use tin snips
- use screw eyes
- use pliers

Materials and Tools:

2 pieces - 1 x 4 x 4
1 piece - 1 x 4 x 5
1 piece - 1 x 3¼ x 5
1 asbestos shingle 8 x 10 (cut)
1 piece - 3/8" x 3" dowel rod
80 grit abrasive paper
120 grit abrasive paper
12 - 6d chasing nails
10 - 3d galvanized shingle nails
varnish
paint thinner
2 - #212 screw eyes

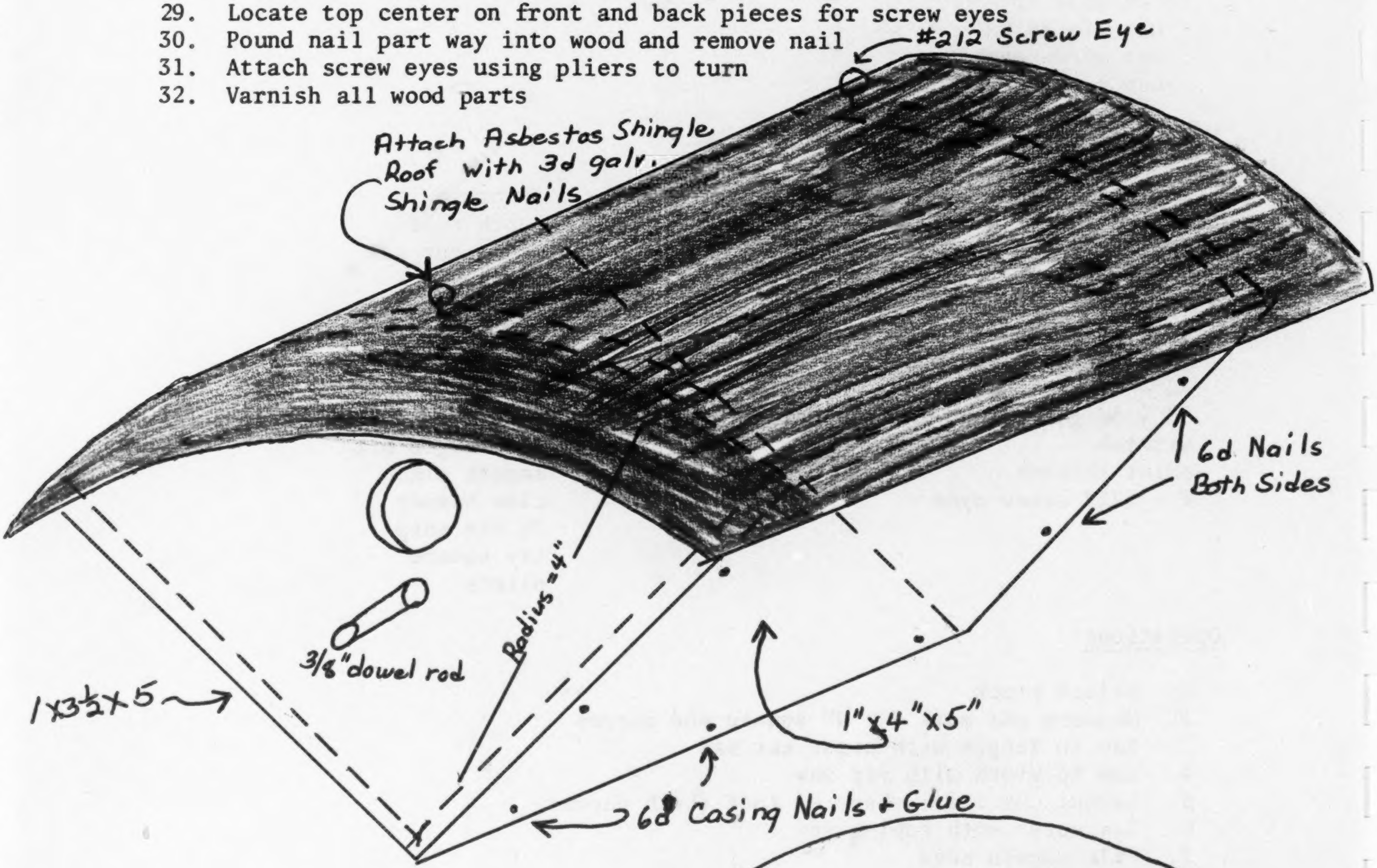
1" brush
bench rule
cross cut saw
rip saw
flat file
compass
pencil
brace
7/8" auger bit
3/8" auger bit
smooth plane
claw hammer
2½ tin snip
try square
pliers

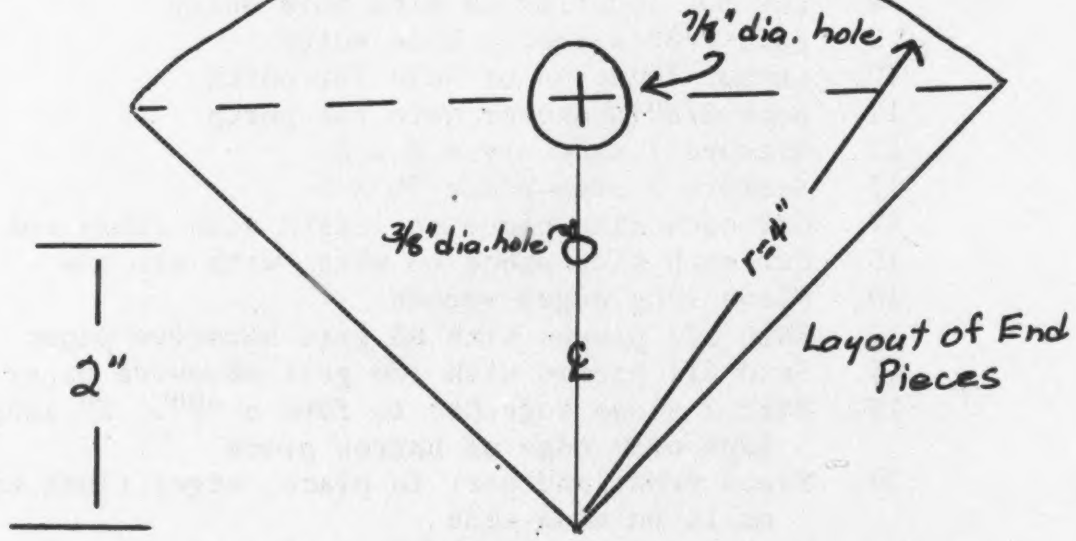
Operations:

1. Select stock
2. Measure and mark 2 - 4" square end pieces
3. Saw to length with cross cut saw
4. Saw to width with rip saw
5. Layout curve for shape of roof (both pieces)
6. Saw curve with coping saw
7. File curved edge
8. Lay out location of bird hole entry
9. Bore 7/8" diameter hole entry
10. Layout location of hole for perch
11. Bore 3/8" diameter hole for perch
12. Measure 1 side piece 4 x 5
13. Measure 1 side piece 3¼ x 5
14. Cut each side piece to length with cross cut saw
15. Cut each side piece to width with rip saw
16. Plane long edges smooth
17. Sand all pieces with 80 grit abrasive paper
18. Sand all pieces with 120 grit abrasive paper
19. Nail 2 sides together to form a "V". 5" lengths go together, wide piece laps over edge of narrow piece
20. Place front end part in place, edges flush with "V" shaped part, nail with nails on each side
21. Repeat step 20 with back end piece
22. Measure and layout size of roof on asbestos shingle (8" x 10")

Bird House, Con't.

23. Cut out roof with tin snips
24. Center roof on bird house so it extends out 2" beyond front piece
25. Nail in place with 3d galvanized shingle nails
26. Measure and mark 3/8" dowel rod for length - 3"
27. Saw dowel to length with coping saw
28. Force dowel rod into 3/8" hole for perch (tap with hammer)
29. Locate top center on front and back pieces for screw eyes
30. Pound nail part way into wood and remove nail
31. Attach screw eyes using pliers to turn
32. Varnish all wood parts


#212 Screw Eye
Attach Asbestos Shingle Roof with 3d galv. Shingle Nails
6d Nails Both Sides
Radius = 4"
3/8" dowel rod
1x3½x5
1"x4"x5"
6d Casing Nails + Glue


7/8" dia. hole
3/8" dia. hole
r=4"
2"
Layout of End Pieces

PROCEDURE SHEET

NAME ____

GRADE 4

AREA: WOOD PROJECT: BIRD HOUSE

SPECIFIC OBJECTIVES: TO USE TIN SNIPS, SCREW EYES AND PLIERS

OTHER INFORMATION: SAFETY FIRST

MUST BE ABLE TO:

SELECT STOCK
SAND WITH THE GRAIN OF THE WOOD
SAND END GRAIN OF WOOD
START A NAIL - POUND A NAIL
MEASURE AND MARK STOCK
SQUARE LINE ACROSS BOARD
USE BOARD AND VISE
USE CROSS CUT SAW

FILE END GRAIN
FILE CONVEX EDGE
LAYOUT CURVED LINE
USE COPING SAW
USE BRACE AND AUGER BIT
APPLY VARNISH
PLANE EDGE OF WOOD
USE A RIP SAW

MATERIALS AND TOOLS:

2 PIECES 1 x 4 x 4
1 PIECE 1 x 4 x 5
1 PIECE 1 x 3¼ x 5
1 ASBESTOS SHINGLE 8 x 10 (CUT)
1 PIECE 3/8" x 3" DOWEL ROD
80 GRIT ABRASIVE PAPER
120 GRIT ABRASIVE PAPER
12 - 6D CASING NAILS
10 - 3D GALVANIZED SHINGLE NAILS
VARNISH
1" BRUSH
PAINT THINNER
2 - #212 SCREW EYES

BENCH RULE
CROSS CUT SAW
RIP SAW
FLAT FILE
COMPASS
PENCIL
BRACE
7/8 AUGER BIT
3/8 AUGER BIT
SMOOTH PLANE
CLAW HAMMER
TRY SQUARE
2½ TIN SNIP
PLIERS

OPERATIONAL STEPS:

_____ 1. SELECT STOCK
_____ 2. MEASURE AND MARK 2 - 4" SQUARE END PIECES
_____ 3. SAW TO LENGTH WITH CROSS CUT SAW
_____ 4. SAW TO WIDTH WITH RIP SAW
_____ 5. LAYOUT CURVE FOR SHAPE OF ROOF (BOTH PIECES)
_____ 6. SAW CURVE WITH COPING SAW
_____ 7. FILE CURVED EDGE
_____ 8. LAYOUT LOCATION OF BIRD HOLE ENTRY
_____ 9. BORE 7/8" DIAMETER HOLE FOR ENTRY
_____ 10. LAYOUT LOCATION OF HOLE FOR PERCH
_____ 11. BORE 3/8" DIAMETER HOLE FOR PERCH
_____ 12. MEASURE 1 SIDE PIECE 4 x 5
_____ 13. MEASURE 1 SIDE PIECE 3¼ x 5
_____ 14. CUT EACH SIDE PIECE TO LENGTH WITH CROSS CUT SAW
_____ 15. CUT EACH SIDE PIECE TO WIDTH WITH RIP SAW
_____ 16. PLANE LONG EDGES SMOOTH

PROCEDURE SHEET: BIRD HOUSE, CON'T.

_____ 17. SAND ALL PIECES WITH 80 GRIT ABRASIVE PAPER
_____ 18. SAND ALL PIECES WITH 120 GRIT ABRASIVE PAPER
_____ 19. NAIL 2 SIDE PIECES TO FORM A V; 5" LENGTH GO TOGETHER, WIDE PIECES LAP OVER EDGE OF NARROW PIECE
_____ 20. PLACE FRONT END PART IN PLACE, EDGES FLUSH WITH "V" SHAPED PART, NAIL WITH TWO NAILS ON EACH SIDE
_____ 21. REPEAT STEP 20 WITH BACK END PIECE
_____ 22. MEASURE AND LAYOUT SIZE OF ROOF ON ASBESTOS SHINGLE (8" x 10")
_____ 23. CUT OUT ROOF WITH TIN SNIPS
_____ 24. CENTER ROOF ON BIRD HOUSE SO IT EXTENDS OUT 2" BEYOND FIRST PIECE
_____ 25. NAIL IN PLACE WITH 3D GALVANIZED SHINGLE NAILS
_____ 26. MEASURE AND MARK 3/8" DOWEL ROD FOR LENGTH - 3"
_____ 27. SAW DOWEL TO LENGTH WITH COPING SAW
_____ 28. FORCE DOWEL ROD INTO 3/8" HOLD FOR PERCH. (TAP WITH HAMMER)
_____ 29. LOCATE TOP CENTER ON FRONT AND BACK PIECE FOR SCREW EYES
_____ 30. POUND NAIL PART WAY INTO WOOD AND REMOVE NAIL
_____ 31. ATTACH SCREW EYES USING PLIERS TO TURN
_____ 32. VARNISH ALL WOOD PARTS

Grade 4

Area: Plastics

Project: Plastic Key Chain Holder

Objectives:

To be able to:
- clean plastic
- laminate plastic surfaces together
- cement plastic
- file plastic smooth
- drill hole in plastic
- saw plastic with coping saw

Materials and Tools:

- 2 pieces of 1/8" plastic 1½" square
- clothespins
- composite class picture to be cut up for individual pictures
- plastic cement
- sandpaper
- steel wool
- key chains
- toothpaste
- hand drill
- 1/8" bit
- coping saw

Operations:

1. Wipe plastic with a clean, dry cloth. Remove all marks especially finger prints.
2. Place picture (from composite) in center of one square.
3. Apply cement around edges of plastic.
4. Place second plastic square over picture and apply pressure by clamping with 2 clothespins. Be sure edges on the squares line up as much as possible.
5. Let dry over night.
6. File edges flat.
7. Sand edges smooth.
8. Smooth surfaces with steel wool.
9. Drill 1/8" hole in one corner.
10. Polish by placing the plastic on a damp cloth which is on a flat surface. Put a small amount of toothpaste on the flat side of the plastic and rub in a back and forth motion.
11. Drop key chain through hole and fasten.

PROCEDURE SHEET

NAME ________________________________

GRADE 4

AREA: PLASTICS PROJECT: PLASTIC KEY CHAIN HOLDER

SPECIFIC OBJECTIVES:

TO BE ABLE TO:
1. CLEAN PLASTIC
2. CEMENT PLASTIC
3. FILE PLASTIC SMOOTH
4. DRILL HOLE IN PLASTIC
5. SAW PLASTIC WITH A COPING SAW

OTHER INFORMATION: PLASTIC CEMENT BECOMES HARD IN ABOUT 5 TO 10 MINUTES; HOWEVER, DRYING OVERNIGHT IS RECOMMENDED BEFORE FILING OR SANDING TO INSURE A SMOOTH SURFACE.

MUST BE ABLE TO:

SAND A FLAT SURFACE
SMOOTH PLASTIC WITH STEEL WOOL
POLISH WITH TOOTHPASTE

MATERIALS AND TOOLS:

2 PIECES OF 1/8" PLASTIC
1 KEY CHAIN PER STUDENT
2 CLOTHESPINS PER STUDENT FOR CLAMPS
COMPOSITE CLASS PICTURE
PLASTIC CEMENT
120 AND 220 GRIT SANDPAPER
STEEL WOOL

HAND DRILL AND 1/8" BIT
COPING SAW

OPERATIONAL STEPS:

____ 1. WIPE PLASTIC WITH A CLEAN, DRY CLOTH. REMOVE ALL MARKS, ESPECIALLY FINGER PRINTS.
____ 2. PLACE PICTURE (FROM COMPOSITE) IN CENTER OF ONE SQUARE.
____ 3. APPLY CEMENT AROUND EDGES OF THE LARGE FLAT SURFACE ABOUT 1/8". DO NOT CEMENT PICTURE.
____ 4. LAMINATE THE PLASTIC. PLACE THE SECOND PLASTIC SQUARE OVER THE PICTURE AND APPLY PRESSURE BY CLAMPING WITH 2 CLOTHESPINS. (BE SURE THE EDGES ARE LINED UP.)
____ 5. LET DRY OVERNIGHT.
____ 6. FILE EDGES FLAT.
____ 7. SAND THE EDGES SMOOTH.
____ 8. SMOOTH SURFACES WITH STEEL WOOL.
____ 9. DRILL A 1/8" HOLE IN ONE CORNER ABOUT 1/8" IN FROM EACH SIDE WITH A HAND DRILL AND DRILL BIT.
____ 10. POLISH BY PLACING THE PLASTIC ON A DAMP CLOTH WHICH IS ON A FLAT SURFACE. PUT A SMALL AMOUNT OF TOOTHPASTE ON THE FLAT SIDE OF THE PLASTIC AND RUB IN A BACK AND FORTH MOTION.
____ 11. DROP KEY CHAIN THROUGH THE HOLE AND FASTEN.

Grade 4

Area: Plastics

Project: Plastic Ear Rings

Objectives:

To be able to:
- clean plastic
- laminate plastic surfaces together
- file plastic smooth
- drill hole in plastic
- saw plastic with coping saw

Materials and Tools:

- 1/8" plastic sheets (colors)
- acrylic solvent cement
- No. 120 grit sandpaper
- No. 220 grit sandpaper
- earring findings
- coping saw
- file

Operations:

1. Cut 6 pieces of plastic ½" x ½" using a coping saw. (Hold large end of plastic piece in vise.)
2. Laminate three squares together using acrylic solvent cement.
   a. Spread the solvent on one clean surface.
   b. Place second surface (clean) over the first and press down.
   c. Place third surface (clean) over second and press down.
   d. Repeat (a), (b), and (c) for other earring.
3. File the sides to form a flat surface.
4. Smooth with sandpaper.
5. Smooth with steel wool.
6. Polish with toothpaste and a damp cloth. Hold in your hands.
7. Cement finding to plastic cube on the corner and let dry for ½ hour.

PROCEDURE SHEET

NAME ____

GRADE 4

AREA: PLASTICS PROJECT: PLASTIC EARRINGS

SPECIFIC OBJECTIVES:

TO BE ABLE TO:
1. CLEAN PLASTIC
2. LAMINATE PLASTIC SURFACES TOGETHER (SOLVENT CEMENT)
3. FILE PLASTIC SMOOTH
4. DRILL HOLE IN PLASTIC
5. SAW PLASTIC WITH A COPING SAW

MUST BE ABLE TO:

SAND A FLAT SURFACE
SMOOTH PLASTIC WITH STEEL WOOL
POLISH WITH TOOTHPASTE
CEMENT FINDINGS TO PLASTIC

MATERIALS AND TOOLS:

1/8" PLASTIC (ACRYLIC) SHEETS (CLEAR OR COLORS)	FILE
ACRYLIC SOLVENT CEMENT	COPING SAW
NO. 120 AND 220 GRIT SANDPAPER	
EARRING FINDINGS	
STEEL WOOL	
TOOTHPASTE	

OPERATIONAL STEPS:

____ 1. CUT 6 PIECES OF PLASTIC ½" SQUARE. HOLD THE LARGE END OF THE PLASTIC IN THE VICE AND USE A COPING SAW FOR CUTTING.
____ 2. LAMINATE THREE SQUARES TOGETHER USING ACRYLIC SOLVENT.
    ____ (A) SPREAD THE SOLVENT ON ONE CLEAN SURFACE.
    ____ (B) PLACE SECOND PLASTIC PIECE (CLEAN OVER THE FIRST AND PRESS DOWN)
    ____ (C) WIPE TOP SURFACE CLEAN AND SPREAD SOLVENT ON IT.
    ____ (D) PLACE THE THIRD PLASTIC PIECE OVER THE SECOND AND PRESS DOWN.
    ____ (E) CLAMP TOGETHER WITH CLOTHESPIN.
    ____ (F) REPEAT STEPS (A) THROUGH (E) FOR OTHER EARRING.
____ 3. LET DRY OVERNIGHT.
____ 4. FILE THE SIDES TO FORM FLAT SURFACES.
____ 5. SMOOTH SIDES WITH SANDPAPER.
____ 6. SMOOTH ALL SURFACES WITH STEEL WOOL. REMOVE ANY SCRATCHES.
____ 7. POLISH WITH TOOTHPASTE AND A DAMP CLOTH. HOLD WORK IN YOUR HANDS.
____ 8. CEMENT FINDINGS TO THE PLASTIC CUBES AT CORNER OF EACH CUBE. LET DRY ½ HOUR.

Grade 4

Area: Metal

Project: Candy Dish

Objectives:

To be able to:
- use steel wool to polish and clean metal
- use a forming mold

Materials and Tools:

4" diameter - 24 gauge soft aluminum disk
4/0 steel wool
plastic tipped hammer (one end flat, one end cone shaped)
aluminum forms

Operations:

1. Select stock
2. Select aluminum forming mold.
3. Center aluminum stock over form.
4. Hold firmly by placing finger and thumb on opposite edges and tap around edge of design with flat face of the plastic-tipped mallet until outline of design is visible.
5. Using pointed tip of plastic mallet start tapping along edge of design to stretch the aluminum down into the mold (cavity).
    a. Work slowly, tap lightly.
    b. Keep working around the edge, gradually working the metal down until it matches the contour of the bottom of the mold.
6. If the outside edges curl or become distorted (not flat) use the flat face of the plastic hammer to flatten (tap lightly).
7. Remove aluminum dish and polish with 4/0 steel wool.

PROCEDURE SHEET

NAME ______________________________________

GRADE 4

AREA: METALS PROJECT: CANDY DISH

SPECIFIC OBJECTIVES: USE A FORMING MOLD
USE STEEL WOOL TO POLISH AND CLEAN METAL

OTHER INFORMATION: SAFETY FIRST

MATERIALS NEEDED:

4" DIAMETER - 24 GAUGE SOFT ALUMINUM DISK
4/0 STEEL WOOL
PLASTIC-TIPPED HAMMER (ONE FLAT END, ONE CONE-SHAPED END)
ALUMINUM FORMS

OPERATIONAL STEPS:

_____ 1. SELECT STOCK

_____ 2. SELECT ALUMINUM FORMING MOLD

_____ 3. CENTER ALUMINUM STOCK OVER FORM

_____ 4. HOLD FIRMLY BY PLACING FINGER AND THUMB ON OPPOSITE EDGES AND RAP AROUND EDGE OF DESIGN WITH FLAT FACE OF THE PLASTIC-TIPPED MALLET UNTIL OUTLINE OF DESIGN IS AVAILABLE

_____ 5. USING POINTED TIP OF PLASTIC MALLET START TAPPING ALONG EDGE OF DESIGN TO STRETCH THE ALUMINUM DOWN INTO THE MOLD (CAVITY)

  A. WORK SLOWLY, TAP LIGHTLY

  B. KEEP WORKING AROUND EDGE, GRADUALLY WORKING THE METAL DOWN UNTIL IT MATCHES THE CONTOUR OF THE BOTTOM OF THE MOLD

_____ 6. IF THE OUTSIDE EDGES CURL OR BECOME DISTORTED (NOT FLAT) USE THE FLAT FACE OF THE PLASTIC HAMMER TO FLATTEN (TAP LIGHTLY)

_____ 7. REMOVE ALUMINUM DISH AND POLISH WITH 4/0 STEEL WOOL

Grade 4

Area: Metal

Project: Bird Feeder (2 raised aluminum bowls)

Objectives:

To be able to:
- measure and mark metal
- paint metal
- use raising hammer
- cut wire
- bend wire
- draw circles on metal
- use a hand drill
- use a center punch

Materials and Tools:

- 2 - 6" diameter - 24 gauge soft aluminum disks
- brown paint
- 1" brush
- 3 paper clips
- 3 - wire pieces 3" long
- #33 wood mallet (round end)
- pliers
- hand drill
- 1/8" diameter wire cutter
- 8" square sand bag (canvas)
- center punch

Operations: The following procedures will be used for both parts of the bird feeder (steps 1-12)

1. Layout 2 concentric circles on one piece of metal with center of disk as the center.
   a. 1 - 4" in diameter
   b. 1 - 2" in diameter
2. Place sand bag on a flat solid surface
3. Place metal on sand bag with small circle guide line over approximate center of bag.
4. Raise the rear of the metal about 20°, then with a round-faced wooden mallet, strike the metal a blow near the front circle guide line.
5. Rotate the metal slightly to the right and strike another blow, slightly overlapping the previous one. (hold the metal at the same angle)
6. Continue as in steps 4 and 5 to complete the circle.
7. Move the metal back a little further on the sand bag and repeat steps 4, 5 and 6 slightly overlapping the previous course. (You are working from the center to the side.)
8. Continue as in steps 6 and 7 until the outer edge of the metal is reached.
   NOTE: if the piece is formed gradually, it will not wrinkle. If wrinkles develop, they should be pounded out immediately.
9. To raise bowl more, repeat steps 5 through 8, rotating the bowl to the left. This will equalize stresses in the metal.
10. Measure and mark the placement of 3 holes, spaced equally around the edge of the bowl, 1/8" from edge.
11. Center punch location of holes (will just make a dent).
12. Use hand drill to drill 1/8" diameter holes.

REPEAT steps 1 through 12 for second bowl.

Bird Feeder, Con't.

13. Cut 3 pieces of wire 3" long (straighten a paper clip)
14. Bend hook on each end
15. Place hook through hole (step 12) and bend hook closed
16. Repeat step 15 for all wires
17. Center the punch and drill 1/8" hole in center top for hanging (use paper clip for hanging)
18. Paint with brown paint

PROCEDURE SHEET

NAME ______________________________

GRADE 4

AREA: METALS PROJECT: BIRD FEEDER (2 RAISED ALUMINUM BOWLS)

SPECIFIC OBJECTIVES:

USE RAISING HAMMER
CUT WIRE
BEND WIRE
DRAW CIRCLES ON METAL
USE A HAND DRILL
USE A CENTER PUNCH

OTHER INFORMATION: SAFETY FIRST

MUST BE ABLE TO:

MEASURE AND MARK METAL
USE A MOLD
PAINT METAL

MATERIALS NEEDED:

2 - 6" DIAMETER 24 GAUGE SOFT ALUMINUM DISKS
BROWN PAINT
1" BRUSH
3 PAPER CLIPS
#33 WOOD MALLET (ROUND END)
8" SQUARE SAND BAND (CANVAS)
PLIERS
HAND DRILL
1/8" DIAMETER WIRE CUTTER

OPERATIONAL STEPS:

THE FOLLOWING PROCEDURE WILL BE USED FOR BOTH PARTS OF THE BIRD FEEDER (STEPS 1 - 12):

____ 1. LAYOUT 2 CONCENTRIC CIRCLES ON ONE PIECE OF METAL WITH CENTER OF DISK AS THE CENTER
   A. 1 - 4" IN DIAMETER
   B. 1 - 1" IN DIAMETER

____ 2. PLACE SAND BAG ON A FLAT SOLID SURFACE

____ 3. PLACE METAL ON SAND BAG WITH SMALL CIRCLE GUIDE LINE OVER APPROXIMATE CENTER OF BAG

____ 4. RAISE THE REAR OF THE METAL ABOUT 20°, THEN WITH ROUND-FACED WOODEN MALLET, STRIKE THE METAL A BLOW NEAR THE FRONT CIRCLE GUIDE LINE

____ 5. ROTATE THE METAL SLIGHTLY TO THE RIGHT AND STRIKE ANOTHER BLOW, SLIGHTLY OVERLAPPING THE PREVIOUS ONE. (HOLD THE METAL AT THE SAME ANGLE)

____ 6. CONTINUE AS IN STEPS 4 AND 5 TO COMPLETE THE CIRCLE

____ 7. MOVE THE METAL BACK A LITTLE FURTHER ON THE SAND BAG AND REPEAT STEPS 4, 5 AND 6, SLIGHTLY OVERLAPPING THE PREVIOUS ONE (YOU ARE WORKING FROM THE CENTER TO THE SIDE)

____ 8. CONTINUE AS IN STEPS 6 AND 7 UNTIL THE OUTER EDGE OF THE METAL IS REACHED. NOTE: IF THE PIECE IS FORMED GRADUALLY, IT WILL NOT WRINKLE. IF WRINKLES DEVELOP, THEY SHOULD BE POUNDED OUT IMMEDIATELY

BIRD FEEDER, CON'T.

_____ 9. TO RAISE BOWL MORE, REPEAT STEPS 5 THROUGH 8, ROTATING THE BOWL TO THE LEFT. THIS WILL EQUALIZE THE STRESSES IN THE METAL.
_____ 10. MEASURE AND MARK THE PLACEMENT OF 3 HOLES, SPACED EQUALLY AROUND THE EDGE OF THE BOWL 1/8" FROM EDGE
_____ 11. CENTER PUNCH LOCATION OF HOLES (WILL JUST MAKE A DENT)
_____ 12. USE HAND DRILL TO DRILL 1/8" DIAMETER HOLES

REPEAT STEPS 1 THROUGH 12 FOR SECOND BOWL

_____ 13. CUT 3 PIECES OF WIRE 3" LONG (STRAIGHTEN A PAPER CLIP)
_____ 14. BEND HOOK ON EACH END
_____ 15. PLACE HOOK THROUGH HOLE (STEP 12) AND BEND HOOK CLOSED
_____ 16. REPEAT STEP 15 FOR ALL WIRES
_____ 17. CENTER THE PUNCH AND DRILL 1/8" HOLE IN CENTER TOP FOR HANGING (USE PAPER CLIP FOR HANGING)
_____ 18. PAINT WITH BROWN PAPER

GRADE 5

WOOD

1. Book Rack
   Procedure Sheet

2. Owl Bread Board
   Procedure Sheet

DRAWING

1. Floorplan of Classroom
   Floorplan of House

2. Architectural Symbols

3. Procedure Sheet for Floorplan of Classroom

4. Procedure Sheet for Floorplan of House

LEATHER

1. Pencil Case
   Coin Purse
   Comb Case

2. Procedure Sheet for Pencil Case

3. Procedure Sheet for Coin Purse

4. Procedure Sheet for Comb Case

PLASTIC

1. Letter Opener
   Procedure Sheet

2. Heat Formed Dish
   Procedure Sheet

Grade 5

Area: Wood

Project: Book Rack

Objectives:

To be able to:
transfer design

Materials and Tools:

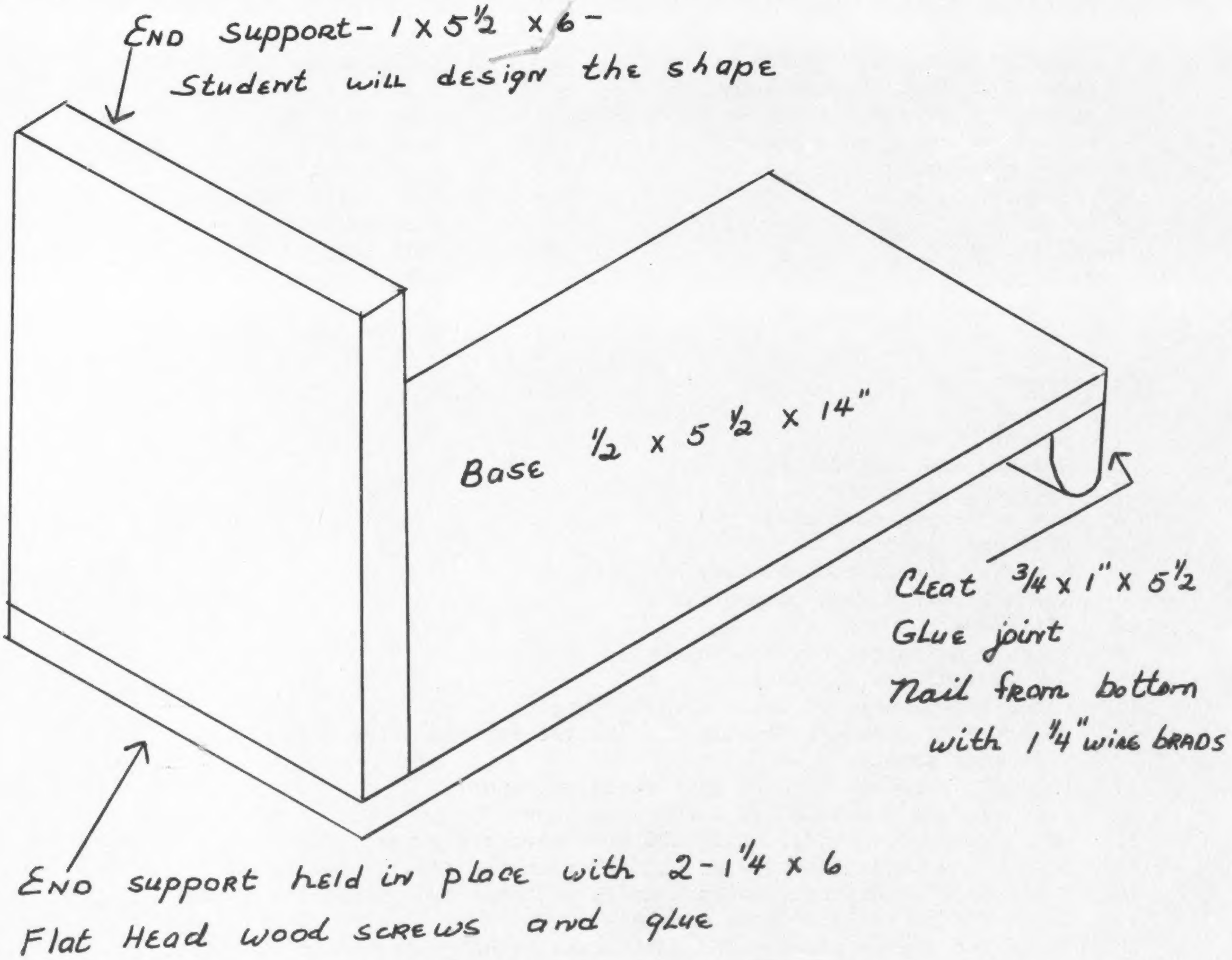
1 piece ½" x 6" x 15" (base)
1 piece 1" x 6" x 6" (end support)
1 piece 1" x 1" x 6" (cleat to raise end)
2 - 1¼ x #6 F.H. wood screws
2 - 1¼" wire brads
varnish
1" brush
paint thinner
pencil
bench rule
hack saw

coping saw
brace
counter sink
hand drill
5/32 twist drill bit
3/32 twist drill bit
claw hammer
nail set
screw driver
try square
1 file (flat and ½ rd)

Operations:

1. Select stock
2. Measure and mark length 14 in.
3. Square line across
4. Saw to length with cross cut
5. File ends smooth
6. Transfer design to end piece
7. Saw art design with coping saw
8. File edges smooth
9. Measure and mark length of cleat
10. Saw to length with hacksaw
11. Plane two corners of cleat at a 45° angle
12. Use file to complete rounding of the two corners (step 11)
13. File ends smooth
14. Sand all surfaces with 80 grit abrasive paper
15. Sand all edges with 80 grit abrasive paper
16. Repeat steps 14 and 15 using 120 grit abrasive paper
17. Layout and locate 2 screw holes 3/8" from one end of base board
18. Drill 5/32" diameter clearance holes at these two points for screws
19. Counter sink for flat head screws
20. Align two pieces of wood and mark screw holes placement in end piece
21. Drill 3/32" anchor hole
22. Apply glue to edge of end piece
23. Align the two pieces and screw 1¼ x 6 flat head screws flush with the surface of the wood
24. Start 2 nails, 1" in from each end of cleat
25. Apply glue to surface of cleat that fits against base board
26. Position cleat and drive nails flush with wood
27. Set nails about 1/8" below surface of wood
28. Varnish
29. Let dry overnight
30. Repeat steps 28 and 29

Book Rack, Con't.



End support - 1 x 5½ x 6 -
Student will design the shape

Base ½ x 5 ½ x 14"

Cleat ¾ x 1" x 5½
Glue joint
Nail from bottom
with 1¼" wire brads

End support held in place with 2-1¼ x 6
Flat Head wood screws and glue

PROCEDURE SHEET

NAME ____

GRADE 5

AREA: WOOD PROJECT: BOOK RACK

SPECIFIC OBJECTIVE: TRANSFER DESIGN

OTHER INFORMATION: SAFETY FIRST

MUST BE ABLE TO:

SELECT STOCK
SAND WITH THE GRAIN OF THE WOOD
START A NAIL
POUND NAILS
GLUE TWO PIECES OF WOOD TOGETHER
MEASURE AND MARK STOCK
SQUARE LINE ACROSS BOARD
USE BOARD AND VISE
USE CROSS CUT SAW
FILE END GRAIN
FILE CONVEX EDGE
USE COPING SAW
FILE CONCAVE EDGE
USE A HAND DRILL
LAYOUT SCREW HOLES
USE BRACE AND COUNTER SINK
USE SCREW DRIVER
APPLY VARNISH
PLANE EDGE OF WOOD
USE A NAIL SET

MATERIALS NEEDED:

1 PIECE ½" x 6" x 15" (BORE)
1 PIECE 1" x 6" x 6" (END SUPPORT)
1 PIECE 1" x 1" x 6" (CLEAT TO RAISE END)
2 - 1¼ x #6 F.H. WOOD SCREWS
2 - 1¼" WIRE BRADS
VARNISH
1" BRUSH
PAINT THINNER
PENCIL
BENCH RULE
TRY SQUARE
HACK SAW
BRACE
COUNTER SINK
HAND DRILL
5/32 TWIST DRILL BIT
3/32 TWIST DRILL BIT
CLAW HAMMER
NAIL SET
SCREW DRIVER
1 FILE (FLAT AND ½ RD)
COPING SAW

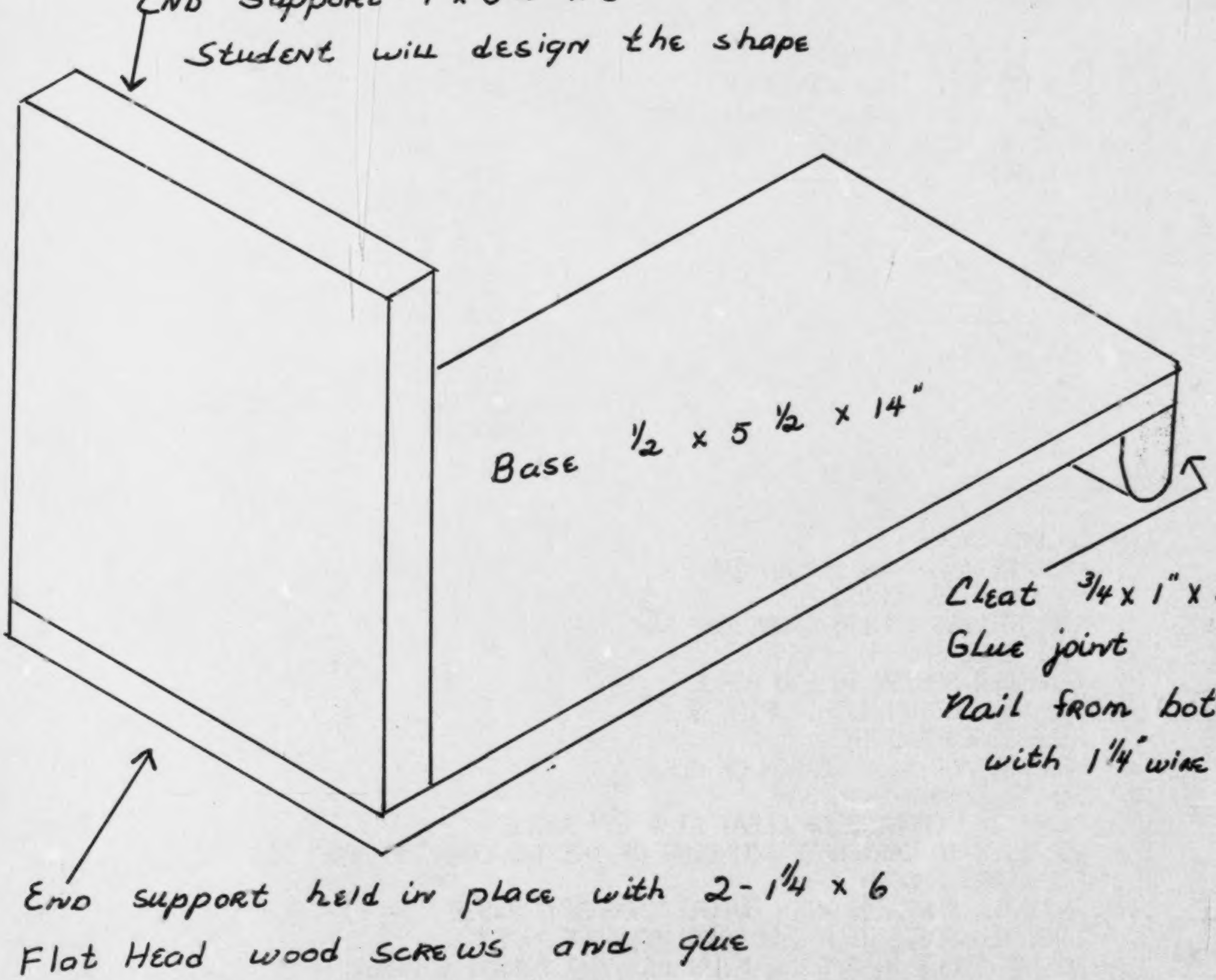
OPERATIONAL STEPS:

_____ 1. SELECT STOCK
_____ 2. MEASURE AND MARK LENGTH 14"
_____ 3. SQUARE LINE ACROSS
_____ 4. SAW TO LENGTH WITH CROSS CUT SAW
_____ 5. FILE ENDS SMOOTH
_____ 6. TRANSFER DESIGN TO END PIECE
_____ 7. SAW OUT DESIGN WITH COPING SAW
_____ 8. FILE EDGES SMOOTH
_____ 9. MEASURE AND NAIL LENGTH OF CLEAT
_____ 10. SAW TO LENGTH WITH SAW
_____ 11. PLANE TWO CORNERS OF CLEAT AT A 45° ANGLE
_____ 12. USE FILE TO CARYSLETE ROUNDING OF THE TWO CORNERS (STEP 11)
_____ 13. FILE ENDS SMOOTH
_____ 14. SAND ALL SURFACES WITH 80 GRIT ABRASIVE PAPER
_____ 15. SAND ALL EDGES WITH 120 GRIT ABRASIVE PAPER
_____ 16. REPEAT STEPS 14 AND 15 USING 120 GRIT ABRASIVE PAPER
_____ 17. LAYOUT AND LOCATE 2 SCREW HOLES 3/8" FROM OTHER END OF BASE BOARD

BOOK RACK, CON'T.

_____ 18. DRILL 5/32 DIAMETER CLEARANCE HOLES AT THESE TWO POINTS
_____ 19. COUNTER SINK FOR FLAT HEAD SCREWS
_____ 20. ALIGN TWO PIECES OF WOOD AND MARK SCREW HOLES PLACEMENT IN END PIECE
_____ 21. DRILL 3/32" ANCHOR HOLE
_____ 22. APPLY GLUE TO EDGE OF END PIECE
_____ 23. ALIGN THE TWO PIECES AND SCREW 1¼ X 6 FLAT HEAD SCREWS FLUSH WITH SURFACE OF WOOD
_____ 24. START 2 NAILS, 1" IN FROM EACH END OF CLEAT
_____ 25. APPLY GLUE TO SURFACE OF CLEAT THAT FITS AGAINST BASE BOARD
_____ 26. POSITION CLEAT AND DRIVE NAILS FLUSH WITH WOOD
_____ 27. SET NAILS ABOUT 1/8" BELOW SURFACE OF WOOD
_____ 28. VARNISH
_____ 29. LET DRY OVER NIGHT
_____ 30. REPEAT STEPS 28, 29

End support - 1 x 5½ x 6 -
Student will design the shape



Cleat ¾ x 1" x 5½
Glue joint
Nail from bottom
with 1¼" wire brads

End support held in place with 2 - 1¼ x 6
Flat Head wood screws and glue

Grade 5

Area: Wood

Project: Owl Bread Board

Objectives:

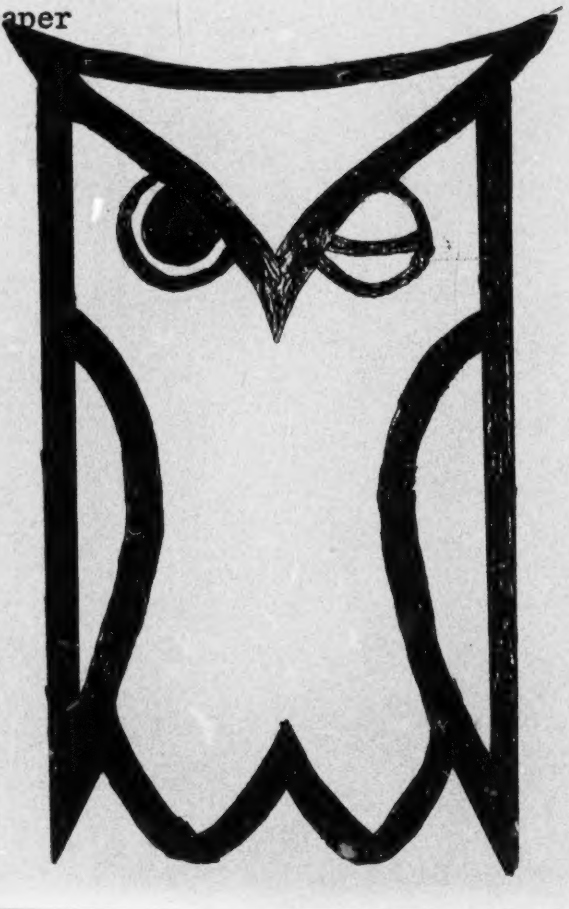
To be able to:
- use a wood burning set
- apply mineral oil

Materials and Tools:

- 1 piece 1 x 8 x 12 soft maple
- mineral oil
- rags
- carbon paper
- bench rule
- pencil
- try square
- cross cut saw
- coping saw
- flat file
- ½ rd file
- brace
- 3/8" auger bit
- wood burner

Operations:

1. Select stock
2. Measure and mark 12" length
3. Square line across at mark
4. Saw to length with cross cut saw
5. Transfer given design to wood (or use your own design) using carbon paper
6. Saw out shape with coping saw
7. File edges smooth (convex edge with flat file, concave edge with ½ rd file)
8. Locate and mark hole 3/4" from top edge on center line
9. Bore 3/8" diameter hole
10. Wood burn design on surface of wood
11. Sand all surfaces and edges with 80 grit abrasive paper
12. Repeat step 9 with 120 grit abrasive paper
13. Apply mineral oil finish
14. Rub in well with fingers
15. Wipe off surplus
16. Let dry overnight



PROCEDURE SHEET

NAME ______________________________
GRADE 5
AREA: WOOD
PROJECT: OWL BREAD BOARD

SPECIFIC OBJECTIVES: TRANSFER DESIGN
USE A WOOD BURNING SET
APPLY MINERAL OIL

OTHER INFORMATION: SAFETY FIRST

MUST BE ABLE TO:

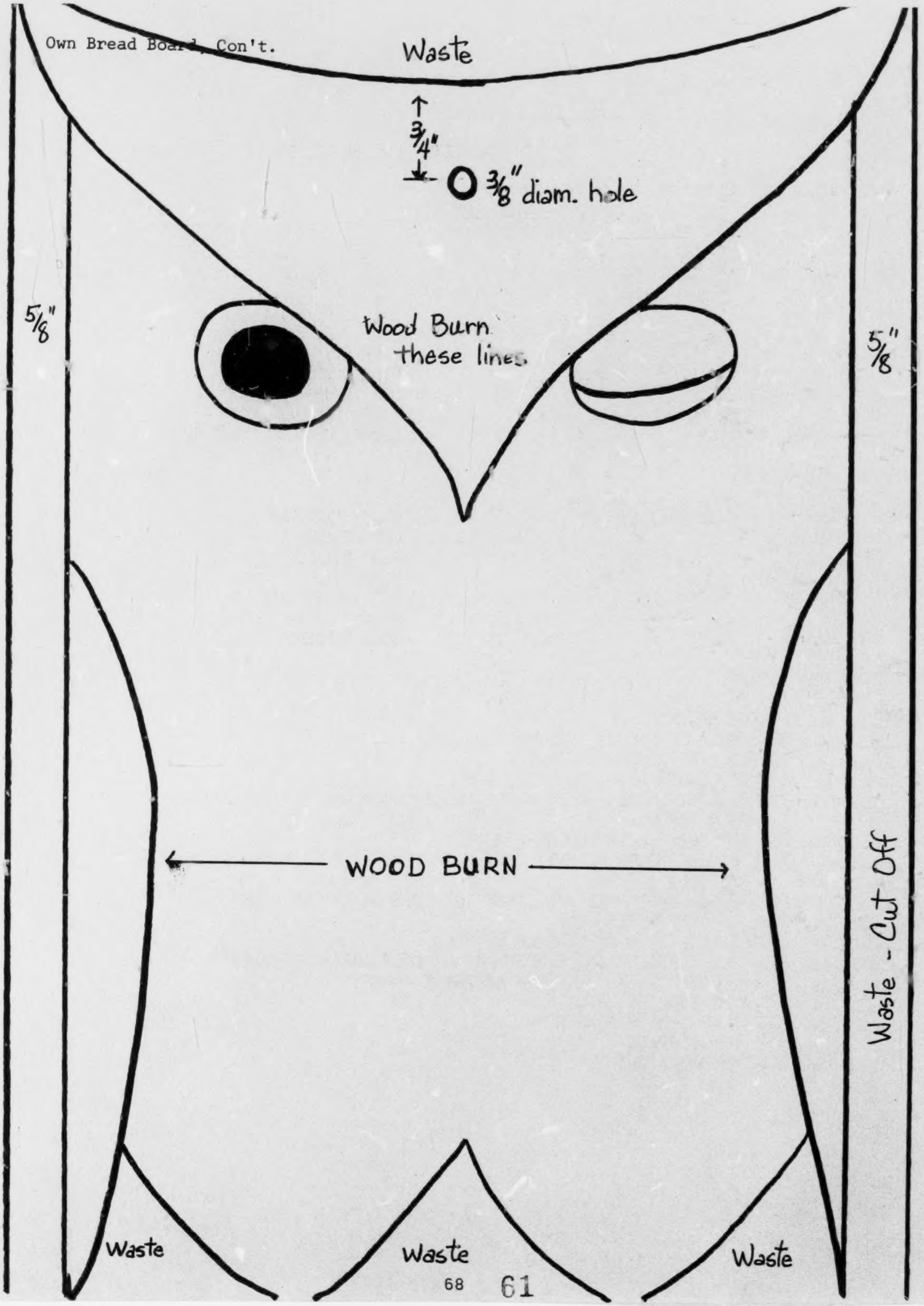
SELECT STOCK
SAND WITH THE GRAIN OF THE WOOD
SAND END GRAIN OF WOOD
MEASURE AND MARK STOCK
USE BOARD AND VISE
FILE END GRAIN
FILE CONVEX EDGE
USE COPING SAW
FILE CONCAVE EDGE
USE BRACE AND AUGER BIT

MATERIALS NEEDED:

1 PIECE 1 x 8 x 12 SOFT MAPLE
MINERAL OIL
RAGS
CARBON PAPER
BENCH RULE
PENCIL
TRY SQUARE
CROSS CUT SAW
COPING SAW
FLAT FILE
½ RD FILE
3/8" AUGER BIT
BRACE
WOOD BURNER

OPERATIONAL STEPS:

_____ 1. SELECT STOCK
_____ 2. MEASURE AND NAIL 12" LENGTH
_____ 3. SQUARE LINE ACROSS AT MARK
_____ 4. SAW TO LENGTH WITH CROSS CUT SAW
_____ 5. TRANSFER GIVEN DESIGN TO WOOD (OR USE YOUR OWN DESIGN USING CARBON PAPER)
_____ 6. SAW OUT SHAPE WITH COPING SAW
_____ 7. FILE EDGES SMOOTH (CONVEX EDGE WITH FLAT FILE, CONCAVE EDGE WITH ½ RD FILE)
_____ 8. LOCATE AND MARK HOLE 3/4" FROM TOP EDGE ON CENTER LINE
_____ 9. BORE 3/8" DIAMETER HOLE
_____ 10. WOOD BURN DESIGN ON SURFACE OF WOOD
_____ 11. SAND ALL SURFACES AND EDGES WITH 80 GRIT ABRASIVE PAPER
_____ 12. REPEAT STEP 9 WITH 120 GRIT ABRASIVE PAPER
_____ 13. APPLY MINERAL OIL FINISH
_____ 14. RUB IN WELL WITH FINGERS
_____ 15. WIPE OFF SURPLUS
_____ 16. LET DRY OVERNIGHT


Waste
3/4"
3/8" diam. hole
5/8"
Wood Burn these lines
5/8"
WOOD BURN
Waste - Cut Off
Waste
Waste
Waste

Grade 5

Area: Drawing

Projects: (1) Floorplan of Classroom,
(2) Floorplan of House

Objectives:

To be able to:
- read a tape measure
- read a ruler to the nearest 1/8 inch
- reduce full size measurements to a given scale
- place the physical features in the appropriate place on the drawing
- make a neat, accurate drawing
- use proper erasing procedures
- letter the drawing in a neat, orderly manner using manuscript writing
- select and draw proper plan view symbols
- read another person's plan

Materials and Tools:

- graph paper
- sharp pencil
- eraser
- ruler
- tape measure

Operation:

(1.) on graph paper (½" squares) 17 x 22 or 18 x 24, make a scale drawing of the classroom showing all physical features, i.e., placement of doors, windows, blackboards, furniture, etc. ½" = 1' - 0". Drawing is to be made using a ruler.

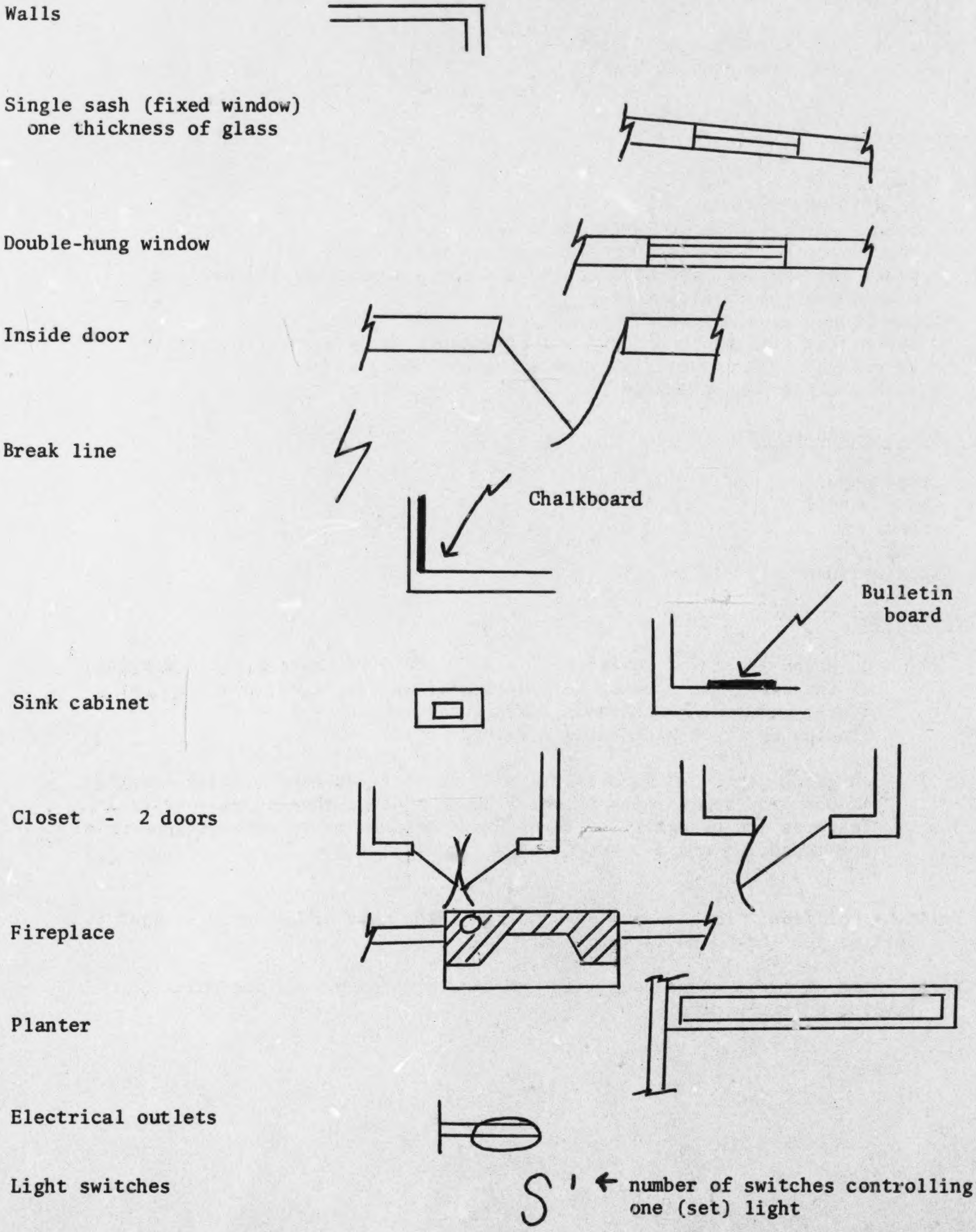
(2.) on graph paper (¼" squares) 17 x 22 or 18 x 24, make a scale drawing of one or several rooms of the student's house showing all physical features and placement of furniture. Drawing to be made using a ruler for measuring and a straight edge. ¼" = 1' - 0".

Tell the children: imagine you sawed off the top half of the room -- what is left as you look down is the floor plan.

Note: make all grid measurements at one time without moving the ruler. (avoids multiple error)

NOTE: Each student is to have a sheet like this

ARCHITECTURAL SYMBOLS


Walls
Single sash (fixed window) one thickness of glass
Double-hung window
Inside door
Break line
Chalkboard
Bulletin board
Sink cabinet
Closet - 2 doors
Fireplace
Planter
Electrical outlets
Light switches
S 1
number of switches controlling one (set) light

PROCEDURE SHEET

NAME ____

GRADE 5

AREA: DRAWING   PROJECT: FLOORPLAN OF CLASSROOM

SPECIFIC OBJECTIVES:

- READ A TAPE MEASURE
- READ A RULER TO THE NEAREST 1/8 INCH
- REDUCE FULL SIZE MEASUREMENTS TO A GIVEN SCALE
- PLACE THE PHYSICAL FEATURES IN THE APPROPRIATE PLACE ON THE DRAWING
- MAKE A NEAT, ACCURATE DRAWING
- USE PROPER ERASING PROCEDURES
- LETTER THE DRAWING IN A NEAT, ORDERLY MANNER USING MANUSCRIPT WRITING
- SELECT AND DRAW PROPER PLAN VIEW SYMBOLS
- READ ANOTHER PERSON'S PLAN

OTHER INFORMATION:

- SCALE ½" = 1'
- MUST BE ABLE TO MEASURE BY INCH, ½ INCH, AND ¼ INCH
- MUST UNDERSTAND THE MEANING OF PARALLEL, HORIZONTAL, VERTICAL, CURVED, STRAIGHT ARC
- MUST UNDERSTAND WHAT IS MEANT BY LENGTH, WIDTH, AND DEPTH

MATERIALS NEEDED:

GRAPH PAPER	ERASER
SHARP PENCIL	RULER

OPERATIONAL STEPS:

_____ 1. MEASURE THE CLASSROOM AS A CLASS PROJECT. LOCATE AND RECORD MEASUREMENTS OF:

DOORS__________ WINDOWS __________ CHALKBOARD __________

BULLETIN BOARDS __________ SINK ______ CLOSET ____________

OTHER ____________

_____ 2. DRAW IN OUTSIDE WALLS AND ENTRY. (IF ONE SIDE OF ROOM IS OPEN, DO NOT DRAW IN A WALL)

_____ 3. DRAW IN DOOR. W X L

_____ 4. DRAW IN WINDOWS. W X L

_____ 5. DRAW IN CHALKBOARDS. W X L

_____ 6. DRAW IN BULLETIN BOARDS. W X L

_____ 7. DRAW IN SINK CABINET. W X L X D

_____ 8. DRAW IN CLOSET.

_____ 9. LOCATE AND DRAW SYMBOL FOR LIGHT SWITCHES (S).

_____ 10. LOCATE AND DRAW SYMBOL FOR ELECTRICAL OUTLETS (⊖).

_____ 11. MANUSCRIPT WRITE YOUR NAME, GRADE, AND THE DATE ON THE PLAN.

PROCEDURE SHEET

NAME ______________________________________
GRADE 5
AREA: DRAWING PROJECT: FLOORPLAN OF HOME (LIVING ROOM, THEN THE BEDROOM)

SPECIFIC OBJECTIVES:
- READ A TAPE MEASURE
- READ A RULER TO THE NEAREST 1/8 INCH
- REDUCE FULL SIZE MEASUREMENTS TO A GIVEN SCALE
- PLACE THE PHYSICAL FEATURES IN THE APPROPRIATE PLACE ON THE DRAWING
- MAKE A NEAT, ACCURATE DRAWING
- USE PROPER ERASING PROCEDURES
- LETTER THE DRAWING IN A NEAT, ORDERLY MANNER USING MANUSCRIPT WRITING
- SELECT AND DRAW PROPER PLAN VIEW SYMBOLS
- READ ANOTHER PERSON'S PLAN

OTHER INFORMATION:
- SCALE ¼" - 1' - 0"
- MUST BE ABLE TO MEASURE BY INCH, ½ INCH AND ¼ INCH
- MUST UNDERSTAND THE MEANING OF PARALLEL, HORIZONTAL, VERTICAL, CURVED, STRAIGHT ARC
- MUST UNDERSTAND WHAT IS MEANT BY LENGTH, WIDTH AND DEPTH

MATERIALS NEEDED:

GRAPH PAPER	ERASER
SHARP PENCIL	RULER
	TAPE MEASURE

OPERATIONAL STEPS:

_____ 1. MEASURE THE ROOM
WALL ______________________________________
DOORS ______________________________________
WINDOWS ______________________________________
CLOSETS ______________________________________
FIREPLACE ______________________________________
PLANTER ______________________________________
ELECTRICAL OUTLERS ______________________________________
LIGHT SWITCHES ______________________________________
OTHER ______________________________________
_____ 2. DRAW IN OURSIDE WALLS
_____ 3. DRAW IN DOOR L x W
_____ 4. DRAW IN WINDOWS L x W
_____ 5. DRAW IN CLOSETS, FIREPLACE AND PLANTER
_____ 6. DRAW SYMBOL FOR LIGHT SWITCHES IN PROPER PLACE
_____ 7. DRAW IN SYMBOL FOR ELECTRICAL OUTLETS
_____ 8. IF YOU HAVE TIME, DRAW IN THE FURNITURE
_____ 9. MANUSCRIPT WRITE YOUR NAME, GRADE, AND THE DATE ON THE PLAN

Grade 5

Area: Leather

Projects: (1) Pencil case
(2) Coin purse
(3) Comb case

Objectives:

To be able to:
stamp a design on leather using proper tools
lace a double thickness of leather using the whip stitch

Materials and tools:

Kits for pencil case, coin purse or comb case.
Leather stamps
Sponge
Wooden mallet

Operation:

1. Draw design on paper using those stamping tool designs available in the stamp kit.
2. Moisten leather from back (refer to grade 3).
3. Stamp design on front side using stamping tools (each child should follow his design as close as possible).
4. Let dry naturally for 2 days. Apply finish - wax on smooth sides.
5. Lace using a whip stitch. See sample.

PROCEDURE SHEET

NAME_______________________________________

AREA: LEATHER

PROJECT: PENCIL CASE

GRADE 5

SPECIFIC OBJECTIVES:

STAMP A DESIGN ON LEATHER USING PROPER TOOLS
LACE A DOUBLE THICKNESS OF LEATHER USING THE WHIP STITCH

OTHER INFORMATION:

SAFETY FIRST
STEPS 2, 3, 4, AND 5 MUST BE DONE IN ONE DAY.
MUST KNOW PROPER PROCEDURE IN MOISTENING LEATHER.
MUST UNDERSTAND BASIC TOOLING PROCEDURE.
MUST BE ABLE TO APPLY A WAX FINISH TO THE LEATHER.
MUST BE ABLE TO LACE USING THE WHIP STITCH.

MATERIALS NEEDED:

LEATHER STAMPS
KITS FOR PENCIL CASE
SPONGE
WOODEN MALLET

OPERATIONAL STEPS:

_____1. DRAW THE DESIGN YOU WOULD LIKE TO USE FOR YOUR PROJECT ON A PIECE OF PAPER. USE THE DESIGNS ON THE STAMPING TOOLS IN YOUR DRAWING. MAKE THE DESIGN FOR THE FRONT.

_____2. LAY THE LEATHER ON A WET SPONGE WITH SMOOTH SIDE OF LEATHER UP. LEAVE THE LEATHER ON SPONGE UNTIL THE FRONT DARKENS. PRESS DOWN GENTLY ON THE LEATHER WHILE IT IS ON THE SPONGE.

_____3. REMOVE FROM SPONGE AND PLACE ON YOUR DESK TOP.

_____4. STAMP THE DESIGN ON THE SMOOTH SIDE OF THE LEATHER (FRONT PIECE) USING THE STAMPS NEEDED FOR YOUR DESIGN. WRITE OR PRINT YOUR NAME ON THE SMOOTH SIDE OF THE BACK PIECE OF LEATHER WITH THE TRACING TOOLS.

_____5. FOLD OVER FLAP AND WEIGH DOWN WITH A BOOK. PUT A PLASTIC BAG BETWEEN LEATHER AND BOOK.

_____6. LET THE LEATHER DRY IN A NATURAL WAY FOR TWO DAYS.

_____7. APPLY THE FINISHING WAX THE SAME AS YOU DO SHOE WAX.
   A. APPLY SMALL AMOUNT OF WAX WITH YOUR FINGERS.
   B. RUB IT IN.
   C. BUFF IT WITH A CLEAN, DRY CLOTH.

_____8. LACE THE TWO PIECES TOGETHER USING A WHIP STITCH. LAY 2 INCHES OF LACING BETWEEN THE FRONT AND BACK PIECES OF LEATHER NEAR THE STARTING EDGE. NOW DO THE WHIP STITCH. THE 2 INCHES WILL BE ENCLOSED IN THE WHIP STITCH. CONTINUE AROUND PROJECT. LEAVE LAST 3 LOOPS LOOSE AND INSERT ABOUT 2 INCHES OF LACING BETWEEN THE FRONT AND BACK PIECES OF LEATHER. THE LACING MUST GO THROUGH THE LOOPS ON THE INSIDE. PULL LACING, ONE LOOP AT A TIME, UNTIL LACING IS TIGHT. (START WITH 3RD LOOP FROM THE END.)

PROCEDURE SHEET

NAME____

AREA: LEATHER

PROJECT: COIN PURSE

GRADE 5

SPECIFIC OBJECTIVES:

STAMP A DESIGN ON LEATHER USING PROPER TOOLS
LACE A DOUBLE THICKNESS OF LEATHER USING THE WHIP STITCH

OTHER INFORMATION:

SAFETY FIRST
STEPS 2, 3, 4, AND 5 MUST BE DONE IN ONE DAY.
MUST KNOW PROPER PROCEDURE IN MOISTENING LEATHER.
MUST UNDERSTAND BASIC TOOLING PROCEDURE.
MUST BE ABLE TO APPLY WAX FINISH TO THE LEATHER.
MUST BE ABLE TO LACE USING THE WHIP STITCH.

MATERIALS AND TOOLS:

LEATHER STAMPS	SPONGE
KITS FOR COIN PURSE	WOODEN MALLET

OPERATIONAL STEPS:

_____1. DRAW THE DESIGN YOU WOULD LIKE TO USE FOR YOUR PROJECT ON A PIECE OF PAPER. USE THE DESIGNS ON THE STAMPING TOOLS IN YOUR DRAWING. MAKE THE DESIGN FOR THE FRONT.

_____2. LAY THE LEATHER ON A WET SPONGE WITH SMOOTH SIDE OF LEATHER UP. LEAVE LEATHER ON SPONGE UNTIL THE FRONT DARKENS. PRESS DOWN GENTLY ON THE LEATHER WHILE IT IS ON THE SPONGE.

_____3. REMOVE FROM SPONGE AND PLACE ON YOUR DESK TOP.

_____4. STAMP THE DESIGN ON THE SMOOTH SIDE OF THE LEATHER (FRONT PIECE) USING THE STAMPS NEEDED FOR YOUR DESIGN. WRITE OR PRINT YOUR NAME ON THE SMOOTH SIDE OF THE BACK PIECE OF LEATHER WITH THE TRACING TOOL.

_____5. FOLD OVER FLAP AND WEIGH DOWN WITH A BOOK. PUT A PLASTIC BAG BETWEEN LEATHER AND BOOK.

_____6. LET THE LEATHER DRY IN A NATURAL WAY FOR TWO DAYS.

_____7. APPLY THE FINISHING WAX THE SAME WAY YOU DO SHOE WAX.
   A. APPLY SMALL AMOUNT OF WAX WITH YOUR FINGERS
   B. RUB IT IN
   C. BUFF IT WITH A CLEAN, DRY CLOTH

_____8. LACE THE TWO PIECES TOGETHER USING A WHIP STITCH. LAY 2 INCHES OF LACING BETWEEN THE FRONT AND BACK PIECES OF LEATHER NEAR THE STARTING EDGE. NOW DO THE WHIP STITCH. THE 2 INCHES WILL BE ENCLOSED IN THE WHIP STITCH. CONTINUE AROUND THE PROJECT. LEAVE LAST 3 LOOPS LOOSE AND INSERT ABOUT 2 INCHES OF LACING BETWEEN THE FRONT AND BACK PIECES OF LEATHER. THE LACING MUST GO THROUGH THE LOOPS ON THE INSIDE. PULL LACING, ONE LOOP AT A TIME, UNTIL LACING IS TIGHT. (START WITH 3RD LOOP FROM THE END.)

PROCEDURE SHEET

NAME____

AREA: LEATHER PROJECT: COMB CASE

SPECIFIC OBJECTIVES: GRADE 5

STAMP A DESIGN ON LEATHER USING PROPER TOOLS.
LACE A DOUBLE THICKNESS OF LEATHER USING THE WHIP STITCH.

OTHER INFORMATION:

SAFETY FIRST
MUST KNOW PROPER PROCEDURE IN MOISTENING LEATHER
MUST UNDERSTAND BASIC TOOLING PROCEDURE.
MUST BE ABLE TO APPLY WAX FINISH TO THE LEATHER.
MUST BE ABLE TO LACE USING THE WHIP STITCH.

MATERIALS AND TOOLS:

LEATHER STAMPS
KITS FOR COMB CASE
SPONGE
WOODEN MALLET

OPERATIONAL STEPS:

_____1. DRAW THE DESIGN YOU WOULD LIKE TO USE FOR YOUR PROJECT ON A PIECE OF PAPER. USE THE DESIGNS ON THE STAMPING TOOLS IN YOUR DRAWING. MAKE THE DESIGN FOR THE FRONT.

_____2. LAY THE LEATHER ON A WET SPONGE WITH SMOOTH SIDE OF LEATHER UP. LEAVE LEATHER ON SPONGE UNTIL THE FRONT DARKENS. PRESS DOWN GENTLY ON THE LEATHER WHILE IT IS ON THE SPONGE.

_____3. REMOVE FROM SPONGE AND PLACE ON YOUR DESK TOP.

_____4. STAMP THE DESIGN ON THE SMOOTH SIDE OF THE LEATHER (FRONT PIECE) USING THE STAMPS NEEDED FOR YOUR DESIGN. WRITE OR PRINT YOUR NAME ON THE SMOOTH SIDE OF THE BACK PIECE OF LEATHER WITH THE TRACING TOOLS.

_____5. LET THE LEATHER DRY IN A NATURAL WAY FOR TWO DAYS.

_____6. APPLY THE FINISHING WAX THE SAME AS YOU DO SHOE WAX.
   A. APPLY SMALL AMOUNT OF WAX WITH YOUR FINGERS.
   B. RUB IT IN.
   C. BUFF IT WITH A CLEAN, DRY CLOTH.

_____7. LACE THE TWO PIECES TOGETHER USING A WHIP STITCH. LAY 2 INCHES OF LACING BETWEEN THE FRONT AND BACK PIECES OF LEATHER NEAR THE STARTING EDGE. NOW DO THE WHIP STITCH. THE 2 INCHES WILL BE ENCLOSED IN THE WHIP STITCH. CONTINUE AROUNG PROJECT. LEAVE LAST 3 LOOPS LOOSE AND INSERT ABOUT 2 INCHES OF LACING BETWEEN THE FRONT AND BACK PIECES OF LEATHER. THE LACING MUST GO THROUGH THE LOOPS ON THE INSIDE. PULL LACING, ONE LOOP AT A TIME, UNTIL LACING IS TIGHT. (START WITH 3RD LOOP FROM THE END.)

Grade 5

Area: Plastics

Project: Letter Opener

Objectives:

To be able to:
heat plastic and free form.
sand a curved edge.
transfer a design.

Materials and tools:

1 piece of 3/16" plastic 1" x 7"
coping saw
sand paper
steel wool
canvas gloves
toothpaste

Operation:

1. Draw the desired outline for the letter opener on paper to fit in a 1" x 7" rectangle. The narrowest width of the letter opener, other than the tip, should be 5/8". The handle should be 3" long.

2. Transfer design to plastic with carbon paper. Place carbon paper over masked surface of plastic and place design over carbon paper; then trace design.

3. Cut out shape with coping saw.

4. File edges and shape cutting edge of the blade (like a knife).

5. Sand edges smooth.

6. Smooth with steel wool.

7. Pre-heat oven to 300° and place the letter opener on a sheet of asbestos board until flexible.

8. Remove from heat, wearing gloves, and twist the area between the blade and handle about 1/4 of a turn. This will make it easier to pick up when it is being used. Allow to cool about 5 minutes.

9. Polish with toothpaste.

PROCEDURE SHEET

NAME______________________________________

GRADE 5

AREA: PLASTICS PROJECT: LETTER OPENER

SPECIFIC OBJECTIVES:

TO BE ABLE TO:
- TRANSFER A DESIGN
- HEAT PLASTIC AND FREEFORM
- SAND A CURVED EDGE

OTHER INFORMATION:

SAFETY FIRST

TWIST THE PLASTIC AND HOLD BY HANDLE IN A HANGING POSITION FOR ABOUT FIVE MINUTES.

MUST BE ABLE TO:

- SAND A FLAT SURFACE
- SMOOTH PLASTIC WITH STEEL WOOL
- POLISH WITH TOOTHPASTE
- FILE PLASTIC SMOOTH
- SAW PLASTIC WITH A COPING SAW

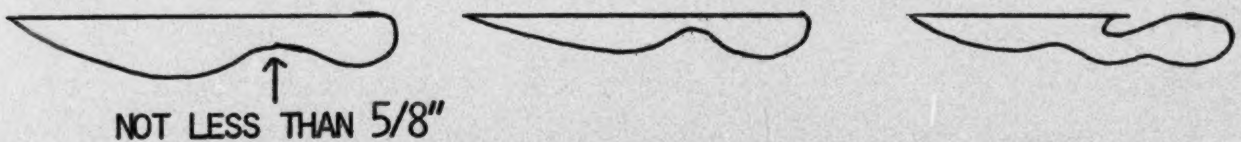
MATERIALS AND TOOLS:

- 1 PIECE OF 3/16" ACRYLIC PLASTIC 1" x 7"
- TOOTHPASTE
- CANVAS GLOVES
- 120 AND 220 GRIT SANDPAPER
- STEEL WOOL
- COPING SAW
- FILE

OPERATIONAL STEPS:

____1. DRAW THE DESIRED OUTLINE FOR THE LETTER OPENER TO FIT IN A 1" x 7" RECTANGLE. THE THINNEST PART SHOULD BE NO LESS THAN 5/8". THE HANDLE SHOULD BE 3" LONG.

EXAMPLE:



____2. TRANSFER THIS OUTLINE TO PLASTIC WITH CARBON PAPER. PLACE CARBON PAPER OVER MASKED SURFACE OF PLASTIC AND THE DESIGN OVER THE CARBON PAPER. THEN TRACE THE DESIGN.

LETTER OPENER (CONTINUED)

_____3. SAW OUT THE SHAPE WITH A COPING SAW.
_____4. FILE EDGES AND SHAPE CUTTING EDGE OF THE BLADE (LIKE A KNIFE).
_____5. SAND EDGES SMOOTH.
_____6. SMOOTH AND REMOVE SCRATCHES BY RUBBING WITH STEEL WOOL.
_____7. PRE-HEAT OVEN TO 300° (USE COOK'S OVEN). PLACE LETTER OPENER ON A SHEET OF ASBESTOS BOARD AND HEAT IN THE OVEN UNTIL IT IS FLEXIBLE. (ABOUT 7 TO 10 MINUTES.)
_____8. REMOVE FROM HEAT WEARING GLOVES, AND TWIST THE AREA BETWEEN THE BLADE AND HANDLE ABOUT 1/4 OF A TURN. ALLOW TO COOL ABOUT 5 MINUTES. THIS WILL MAKE IT EASIER TO PICK UP WHEN IT'S BEING USED.
_____9. POLISH ALL SURFACES BY RUBBING WITH TOOTHPASTE APPLIED TO A SLIGHTLY DAMP CLOTH.

Grade 5

Area: Plastics

Project: Heat Formed Dish

Objectives:

To be able to:
- make a jig for heat formed dish.
- heat plastic and form in mold.
- sand a curved edge

Materials and tools:

1/8" plastic 3" square
5 pieces of wood 1" x 3" x 3"
20 - 6d casing nails
coping saw
file
canvas gloves
toothpaste
block of wood

Operation:

Preparation by teacher: Prepare the molds by pounding a nail 3/4" from edge in the center of each side of the 3" square boards.

1. Round corners of 3" square plastic with file.
2. Sand edges of plastic smooth.
3. Place on a sheet of asbestos in oven (cook's) preheated to 300° until plastic is flexible (about 7 minutes.)
4. Remove from heat (wear gloves) and immediately put into position on mold. Press down in center with a round wood block. Let stand 5 minutes. Reheat if project isn't satisfactory and repeat step 4.
5. Remove from mold and polish with toothpaste and a damp cloth.

PROCEDURE SHEET

NAME____

GRADE 5

AREA: PLASTICS PROJECT: HEAT FORMED DISH

SPECIFIC OBJECTIVES:

TO BE ABLE TO:
MAKE A JIG FOR HEAT FORMED DISH
HEAT PLASTIC AND FORM IN MOLD
SAND A CURVED EDGE
TRANSFER A DESIGN

OTHER INFORMATION:

MUST BE ABLE TO SAND A FLAT SURFACE
MUST BE ABLE TO SMOOTH PLASTIC WITH STEEL WOOL
MUST BE ABLE TO POLISH WITH TOOTHPASTE
MUST BE ABLE TO FILE PLASTIC SMOOTH
MUST BE ABLE TO SAW PLASTIC WITH A COPING SAW

MATERIALS AND TOOLS:

1 PIECE OF 1/8" ACRYLIC PLASTIC 3" SQUARE
5 PIECES OF 1" BOARD AT LEAST 3" SQUARE FOR FORMS
20 - 6D CASING NAILS
TOOTHPASTE
COPING SAW
FILE
CANVAS GLOVES
WOOD BLOCK ABOUT 1-1/2" IN DIAMETER

OPERATIONAL STEPS:

PREPARATION BY TEACHER: PREPARE THE MOLDS BY POUNDING A NAIL 3/8" FROM THE EDGE IN THE CENTER OF EACH SIDE OF THE 3" SQUARE BOARDS.

_____1. ROUND THE CORNERS OF THE 3" SQUARE OF PLASTIC WITH A FILE.
_____2. SAND EDGES OF PLASTIC SMOOTH.
_____3. PRE-HEAT OVEN (COOK'S) TO 300°. PLACE PLASTIC ON A SHEET OF ASBESTOS AND HEAT IN OVEN UNTIL FLEXIBLE. (ABOUT 7 MINUTES.)
_____4. REMOVE FROM HEAT (WEARING GLOVES) AND IMMEDIATELY PRESS INTO POSITION ON THE MOLD USING A ROUND BLOCK TO PUSH THE CENTER DOWN. LET STAND 5 MINUTES.
_____5. REMOVE FROM MOLD AND POLISH WITH TOOTHPASTE AND A DAMP CLOTH.

GRADE 6

WOOD

1. Picture Frame
   Procedure sheet

2. Book Cover
   Procedure sheet

DRAWING

1. Multi-view drawing from a 3-dimensional figure
   Multi-view drawing from a pictorial view
   Enlarging a picture

2. Procedure sheets

METALS

1. Chased Design - Bracelet
   - Letter Opener

2. Procedure sheets

Grade 6

Area: Wood

Project: Picture Frame (9 x 12)

Objectives:

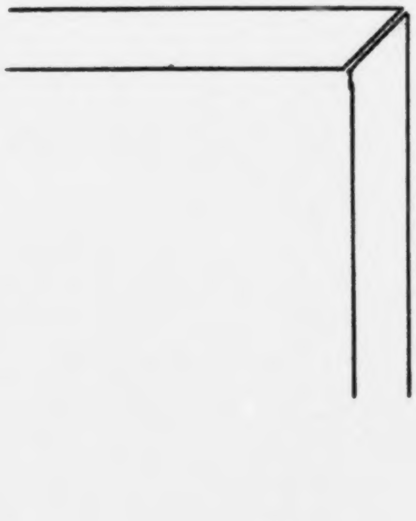
To be able to:
- Use the mitre box
- Use hack saw
- Apply paste shoe polish

Materials and Tools:

- 4-1/2' picture frame
- molding stock
- glue
- 4 - 1" wire brads
- 150 grit abrasive paper
- colored paste wax shoe polish
- rags
- pencil
- bench rule
- shop made mitre box
- hammer
- hack saw

Operations:

1. Select stock
2. Measure each side to length
3. Place stock in mitre box
4. Saw mitres using a hack saw
5. Start wire brad in one end of each side by pounding
6. Apply spot of glue to mitred corner
7. Fit other half of corner in place.
8. Clamp in vise and pound wire brad in flush with surface of wood.
9. Repeat steps 6, 7, and 8 for the other 3 corners
10. Sand corners lightly with 150 grit abrasive paper
11. Apply colored shoe polish with a small rag
12. Let dry overnight.



PROCEDURE SHEET

NAME____

GRADE 6

AREA; WOOD PROJECT: PICTURE FRAME (9 x 12)

SPECIFIC OBJECTIVES:
USE MITRE BOX
APPLY PASTE SHOE POLISH

OTHER INFORMATION:
SAFETY FIRST
MUST BE ABLE TO:
SELECT STOCK
SAND WITH THE GRAIN OF THE WOOD
START A NAIL
POUND NAILS
GLUE 2 PIECES OF WOOD TOGETHER
MEASURE AND MARK STOCK
USE BOARD AND VISE
USE HACKSAW

MATERIALS AND TOOLS:
4-1/2' PICTURE FRAME MOLDING STOCK
GLUE
4 - 1" WIRE BRADS
150 GRIT ABRASIVE PAPER
COLORED SHOE POLISH (PASTE WAX)
RAGS
PENCIL
BENCH RULE
SHOP MADE MITRE BOX
HAMMER
HACKSAW

OPERATIONAL STEPS:

_____1. SELECT STOCK
_____2. MEASURE EACH SIDE TO LENGTH
_____3. PLACE STOCK IN MITRE BOX
_____4. SAW MITRES USING A HACKSAW
_____5. START WIRE BRAD IN ONE END OF SIDE BY POUNDING
_____6. APPLY SPOT OF GLUE TO MITRED CORNER
_____7. FIT OTHER HALF OF CORNER IN PLACE
_____8. CLAMP IN VISE AND POUND WIRE BRAD IN FLUSH WITH SURFACE OF WOOD.
_____9. REPEAT STEPS 6, 7, AND 8 FOR OTHER 3 CORNERS
_____10. SAND CORNERS WITH 150 GRIT ABRASIVE PAPER.
_____11. APPLY COLORED SHOE POLISH WITH A SMALL RAG
_____12. LET DRY OVERNIGHT

Grade 6

Area: Wood

Project: Book Cover

Objectives:

Be able to:
- attach hinges
- use binding posts
- use oil stains
- apply deft finish

Materials and Tools:

- 2 pieces 1/4" plywood 9" x 12"
- 2 screw post binders
- 2 brass hinges 1" x 1" (screw included)
- 100 grit abrasive paper
- 150 grit abrasive paper
- 220 grit abrasive paper
- deft clear finish
- 1" paint brush
- oil stain and rags
- pencil
- bench rule
- try square
- cross cut saw
- hand drill
- 1/4" twist drill bit
- wood burning set
- 3" screw driver

Operations:

1. Select stock
2. Measure and mark length (12")
3. Square line across at mark
4. Saw to length with cross cut saw
5. Measure and mark width 9"
6. Layout line for sawing
7. Saw to width, cross cut saw
8. Layout and mark line 1" from the long edge of one piece of plywood
9. Saw this strip off using a cross cut saw
10. Layout center line lengthwise on 1" wide piece of stock
11. Locate and mark the center point on this 1" wide piece of wood
12. Measure and mark 3" each way from this center point along the center line.
13. Drill 1/4" diameter holes at these points (6" apart).
14. Place the two parts of the top of book together
15. Locate hinges on joint, 1-1/2" in from top and bottom edge of wood
16. Hold in place and mark placement of screws
17. Remove hinges and make a small pilot hole with a nail for each screw
18. Attach hinges with screws
19. Line up top half of book cover on bottom half
20. Mark the two holes for binding posts (step 13) in bottom piece

Book Cover

Operations continued

21. Drill 1/4" diameter holes
22. Sand all surfaces and edges with 100 grit abrasive paper
23. Sand all surfaces and edges with 150 grit abrasive paper
24. Wood burn design on cover of book cover.
25. Apply oil stain with cloth
26. Wipe off surplus stain
27. Let dry overnight
28. Sand very lightly with 220 grit abrasive paper
29. Apply deft finish.

PROCEDURE SHEET

NAME____

GRADE 6

AREA: WOOD PROJECT: BOOK COVER

SPECIFIC OBJECTIVES:

ATTACH HINGES
USE BINDING POSTS
USE OIL STAINS
APPLY DEFT FINISH

OTHER INFORMATION:

SAFETY FIRST
MUST BE ABLE TO:
- SELECT STOCK
- SAND WITH THE GRAIN OF THE WOOD
- START NAIL
- POUND NAILS
- MEASURE AND MARK STOCK
- SQUARE LINE ACROSS BOARD
- USE BOARD AND VISE
- USE CROSS CUT SAW
- USE A HAND DRILL
- USE A SCREW DRIVER
- USE A WOOD BURNING SET

MATERIALS AND TOOLS:

2 PIECES 1/4" PLYWOOD 9" x 12"
2 - SAW POST BINDERS
100 GRIT ABRASIVE PAPER
150 GRIT ABRASIVE PAPER
220 GRIT ABRASIVE PAPER
DEFT CLEAR FINISH
1" PAINT BRUSH
OIL STAIN AND RAGS

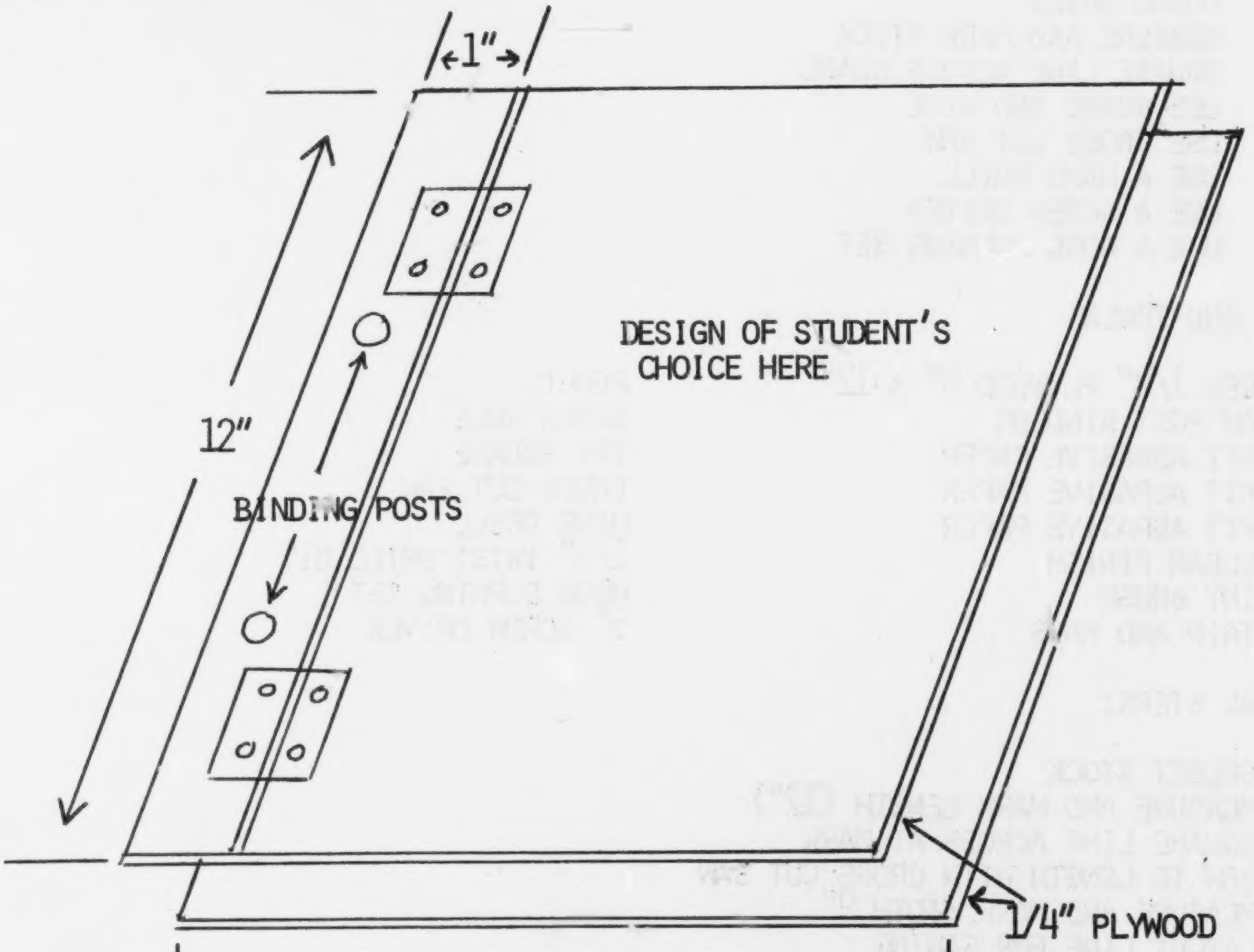
PENCIL
BENCH RULE
TRY SQUARE
CROSS CUT SAW
HAND DRILL
1/4" TWIST DRILL BIT
WOOD BURNING SET
3" SCREW DRIVER

OPERATIONAL STEPS:

_____1. SELECT STOCK
_____2. MEASURE AND MARK LENGTH (12")
_____3. SQUARE LINE ACROSS AT MARK
_____4. SAW TO LENGTH WITH CROSS CUT SAW
_____5. MEASURE AND MARK WIDTH 9"
_____6. LAYOUT LINE FOR SAWING
_____7. SAW TO WIDTH WITH CROSS CUT SAW
_____8. LAYOUT AND MARK LINE 1" FROM THE LONG EDGE OF ONE PIECE OF PLYWOOD.
_____9. SAW THE STRIP OFF USING A CROSS CUT SAW
_____10. LAYOUT CENTER LINE LENGTHWISE ON 1" WIDE PIECE OF STOCK
_____11. LOCATE AND MARK THE CENTER POINT ON THE 1" WIDE PIECE OF WOOD

PROCEDURE SHEET - BOOK COVER (CONTINUED)

______ 12. MEASURE AND MARK 3" EACH WAY FROM THE CENTER LINE
______ 13. DRILL 1/4" DIAMETER HOLES AT THESE 2 POINTS (6" APART)
______ 14. PLACE THE TWO PARTS OF THE TOP OF BOOK COVER TOGETHER
______ 15. LOCATE HINGES ON JOINT 2" IN FROM TOP AND BOTTOM EDGE OF WOOD
______ 16. HOLD IN PLACE AND MARK PLACEMENT OF SCREWS
______ 17. REMOVE HINGES AND MAKE A SMALL PILOT HOLE WITH A NAIL FOR EACH SCREW
______ 18. ATTACH HINGES WITH SCREWS
______ 19. LINE UP TOP HALF OF BOOK COVER ON BOTTOM HALF
______ 20. MARK THE TWO HOLES FOR BINDING POSTS (STEP 13) IN BOTTOM PIECE
______ 21. DRILL 1/4" DIAMETER HOLES
______ 22. SAND ALL SURFACES AND EDGES WITH 100 GRIT ABRASIVE PAPER
______ 23. SAND ALL SURFACES AND EDGES WITH 150 GRIT ABRASIVE PAPER
______ 24. WOOD BURN DESIGN ON COVER OF BOOK COVER
______ 25. APPLY OIL STAIN WITH CLOTH
______ 26. WIPE OFF SURPLUS STAIN
______ 27. LET DRY OVERNIGHT
______ 28. SAND VERY LIGHTLY WITH 220 GRIT ABRASIVE PAPER
______ 29. APPLY DEFT FINISH



Grade 6

Area: Drawing

Projects: (1) Multiview drawing from a 3-dimensional figure, (2) multiview drawing from a pictorial view, (3) enlarging a picture

Objectives:

To be able to:

- read a ruler to the nearest 1/8 inch
- reduce full size measurements to a given scale
- place the physical features in the appropriate place on the drawing
- make a neat, accurate drawing
- use proper erasing procedures
- letter the drawing in a neat, orderly manner using manuscript writing
- select and draw proper plan view symbols
- transfer corresponding points from one grid picture to another
- connect points on a grid picture with straight lines or a smooth curve
- make a grid over any picture, locate and letter points and enlarge the picture to make a new picture
- make a multiview drawing from a three dimensional object
- make a multiview drawing from a pictorial view
- read a multivew drawing

Materials and tools:

- paper
- graph paper
- sharp pencil
- eraser
- ruler
- small grid picture
- three dimensional picture
- compass

Operations:

1. Enlarge a given picture using the grid system, from 1/4" squares to 1" squares. Work sheets to be provided.
2. Enlarge a picture of the student's choice using the grid system.
3. Make a multiview drawing on graph paper of a three dimensional figure to be supplied. Use ruler, compass, pencil, and eraser.
4. Make a multiview drawing on graph paper of a figure given in a pictorial view.

PROCEDURE SHEET

NAME______________________________________

GRADE 6

AREA: DRAWING

PROJECT: MULTIVIEW FROM A 3-DIMENSIONAL FIGURE

SPECIFIC OBJECTIVES:

TO BE ABLE TO:
MAKE A MULTIVIEW DRAWING FROM A THREE DIMENSIONAL OBJECT
READ A MULTIVIEW DRAWING

OTHER INFORMATION:

SCALE 1/4" = 1"

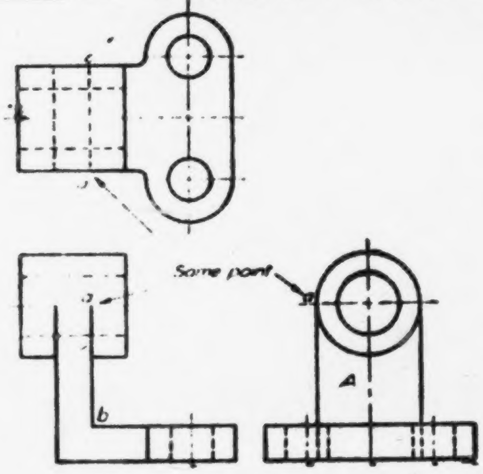
READ A RULER TO THE NEAREST 1/8 INCH
REDUCE FULL SIZE MEASUREMENTS TO A GIVEN SCALE
PLACE THE PHYSICAL FEATURES IN THE APPROPRIATE PLACE ON THE DRAWING
MAKE A NEAT, ACCURATE DRAWING
USE PROPER ERASING PROCEDURES
LETTER THE DRAWING IN A NEAT, ORDERLY MANNER USING MANUSCRIPT WRITING

MATERIALS AND TOOLS:

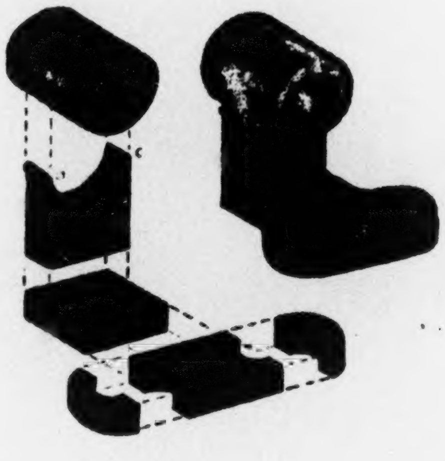
GRAPH PAPER
RULER
THREE DIMENSIONAL FIGURE

OPERATIONAL STEPS:

______ 1. MEASURE THE FIGURE AS A CLASS PROJECT
______ 2. BLOCK (DRAW IN THE LINES) IN THREE VIEWS LIGHTLY ON GRAPH PAPER
______ 3. LOCATE EACH FEATURE (HOLES, ETC.) AND DRAW THESE LINES IN LIGHTLY ON EACH VIEW
______ 4. DARKEN IN THE LINES OF THE FINISHED VIEWS
______ 5. MANUSCRIPT WRITE YOUR NAME, GRADE, AND THE DATE ON THE DRAWING.



(DRAWING ILLUSTRATION)



PROCEDURE SHEET

NAME_______________________________________

GRADE 6

AREA: DRAWING PROJECT: MULTIVIEW FROM A PICTORIAL VIEW

SPECIFIC OBJECTIVES:

TO BE ABLE TO:
MAKE A MULTIVIEW DRAWING FROM A PICTORIAL VIEW
READ A MULTIVIEW DRAWING

OTHER INFORMATION:

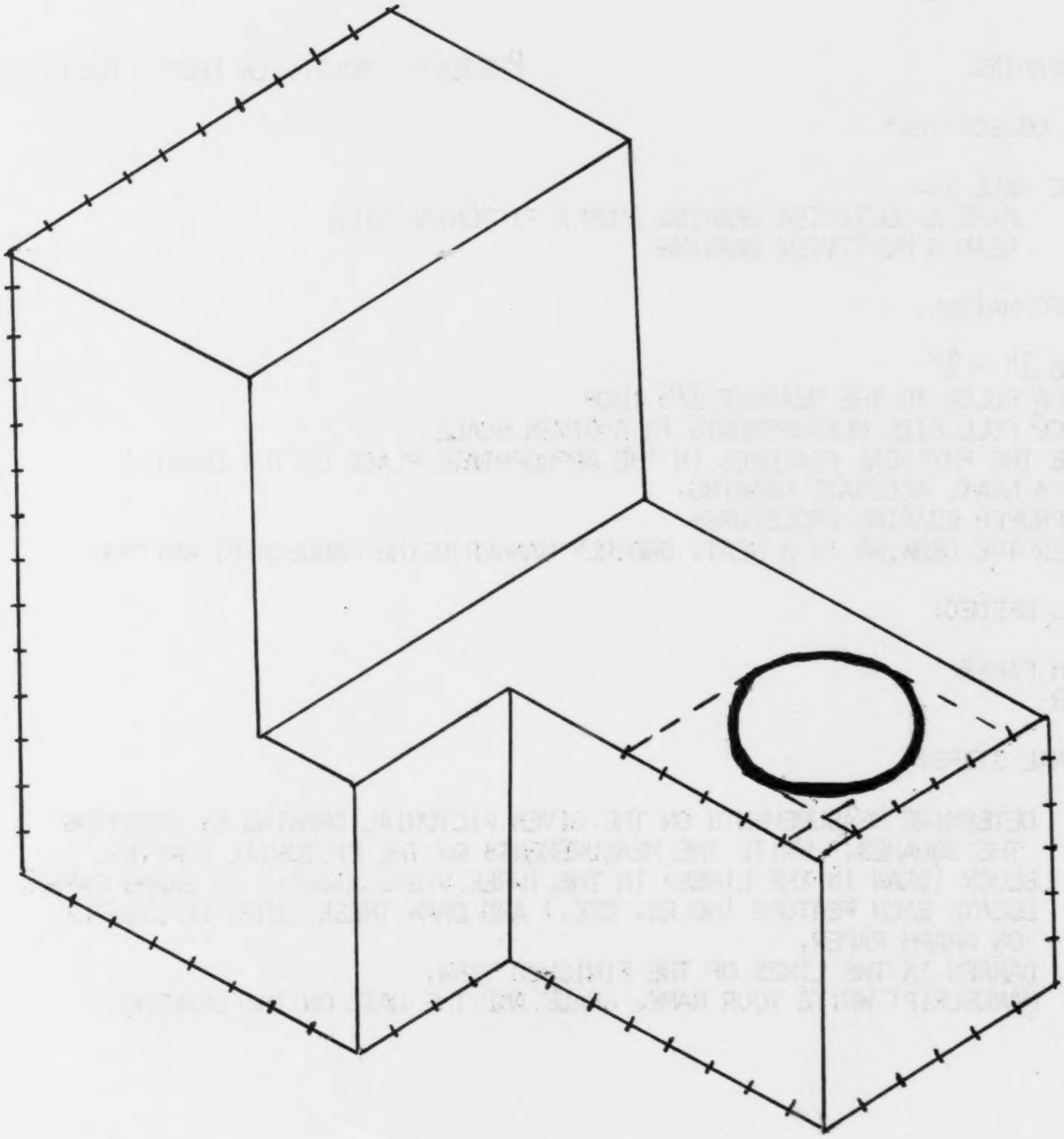
SCALE 1" = 1"
READ A RULER TO THE NEAREST 1/8 INCH
REDUCE FULL SIZE MEASUREMENTS TO A GIVEN SCALE
PLACE THE PHYSICAL FEATURES IN THE APPROPRIATE PLACE ON THE DRAWING
MAKE A NEAT, ACCURATE DRAWING
USE PROPER ERASING PROCEDURES
LETTER THE DRAWING IN A NEAT, ORDERLY MANNER USING MANUSCRIPT WRITING

MATERIALS NEEDED:

GRAPH PAPER
RULER

OPERATIONAL STEPS:

_____ 1. DETERMINE MEASUREMENTS ON THE GIVEN PICTORIAL DRAWING BY COUNTING THE SQUARES. WRITE THE MEASUREMENTS ON THE PICTORIAL DRAWING.
_____ 2. BLOCK (DRAW IN THE LINES) IN THE THREE VIEWS LIGHTLY ON GRAPH PAPER.
_____ 3. LOCATE EACH FEATURE (HOLES, ETC.) AND DRAW THESE LINES IN LIGHTLY ON GRAPH PAPER.
_____ 4. DARKEN IN THE LINES OF THE FINISHED VIEW.
_____ 5. MANUSCRIPT WRITE YOUR NAME, GRADE AND THE DATE ON THE DRAWING.



PROBLEM FOR MULTIVIEW DRAWING

PROCEDURE SHEET

NAME____

GRADE 6

AREA: DRAWING PROJECT: ENLARGING A PICTURE

SPECIFIC OBJECTIVES:

TO BE ABLE TO:

TRANSFER CORRESPONSING POINTS FROM ONE GRID TO ANOTHER.

CONNECT POINTS ON A GRID PICTURE WITH STRAIGHT LINES OR A SMOOTH CURVE

MAKE A GRID OVER ANY PICTURE, LOCATE AND LETTER POINTS, AND ENLARGE THE PICTURE TO MAKE A NEW PICTURE.

OTHER INFORMATION:

SCALE 1/4" = 1"
READ A RULER TO THE NEAREST 1/8"
REDUCE FULL SIZE MEASUREMENTS TO A GIVEN SCALE
PLACE THE PHYSICAL FEATURES IN THE APPROPRIATE PLACE ON THE DRAWING
MAKE A NEAT, ACCURATE DRAWING
USE PROPER ERASING PROCEDURES
LETTER THE DRAWING IN A NEAT, ORDERLY MANNER USING MANUSCRIPT WRITING.

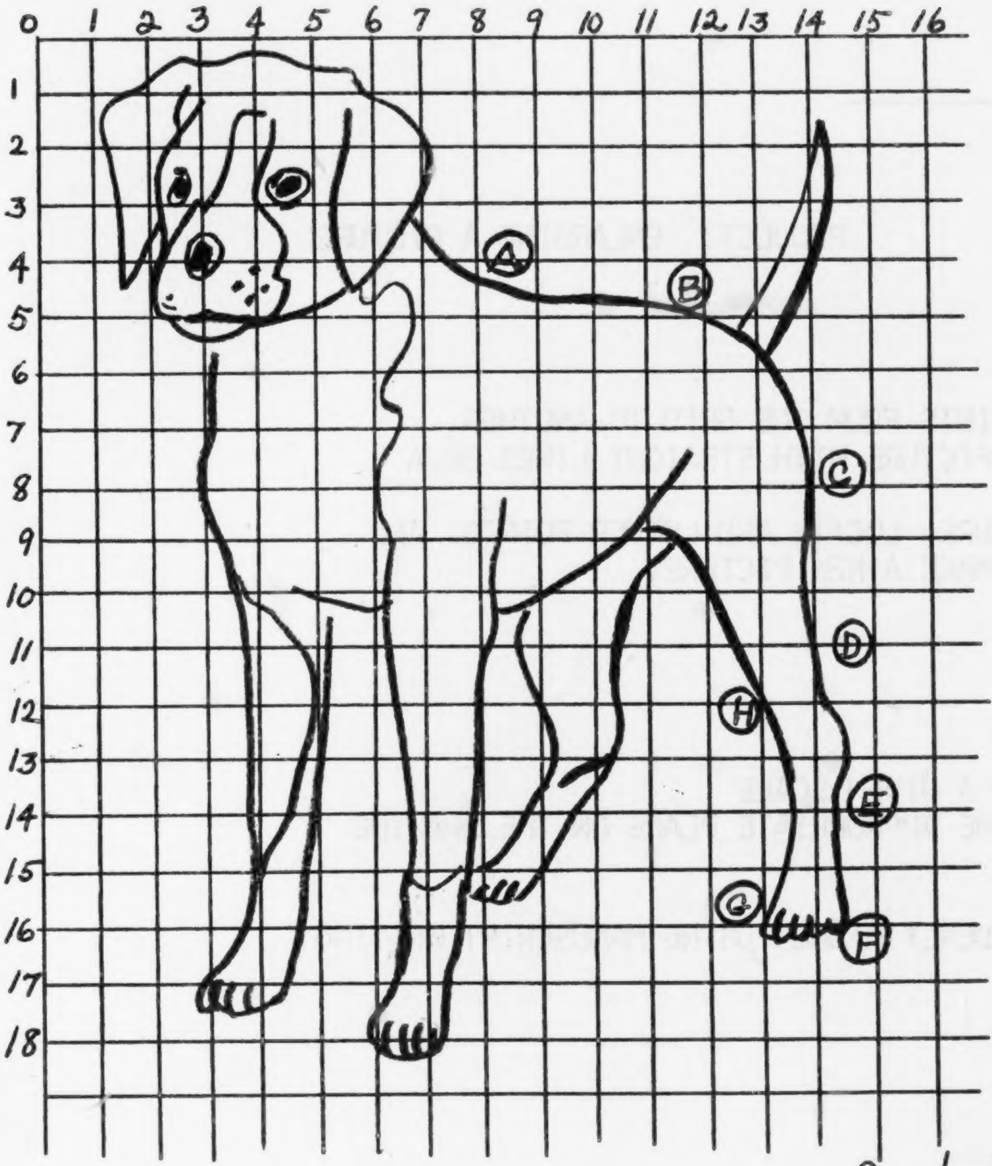
MATERIALS AND TOOLS:

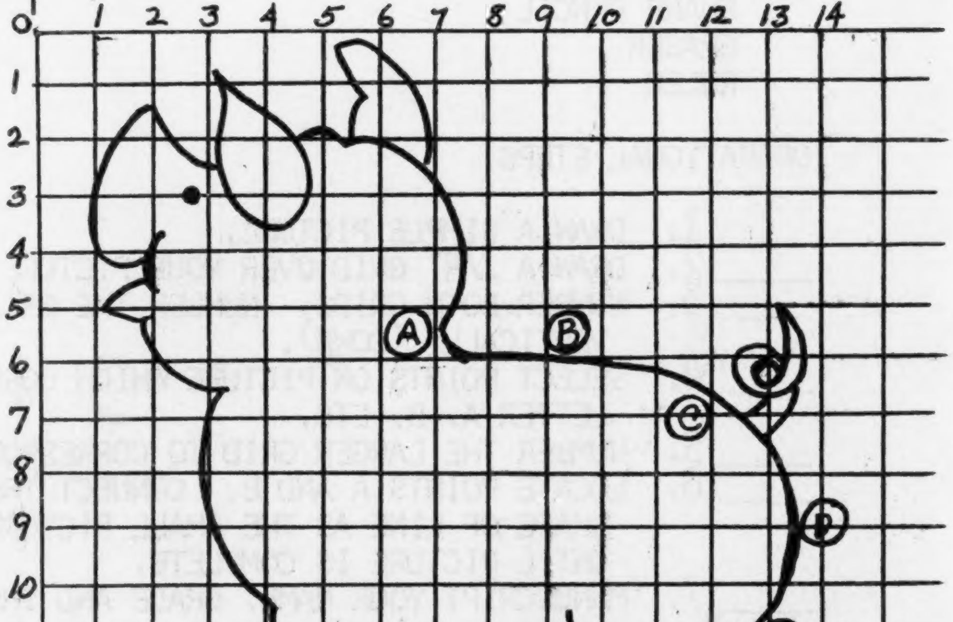
PAPER
GRAPH PAPER
SHARP PENCIL
ERASER
RULER

OPERATIONAL STEPS:

_____ 1. DRAW A SIMPLE PICTURE.
_____ 2. DRAW A 1/4" GRID OVER YOUR PICTURE
_____ 3. NUMBER BOTH GRIDS. NUMBER THE GRID HORIZONTALLY (ACROSS) AND VERTICALLY (DOWN).
_____ 4. SELECT POINTS ON PICTURE WHICH CORRESPOND WITH GRID LINES AND LETTER A, B, ETC.
_____ 5. NUMBER THE LARGER GRID TO CORRESPOND WITH THE PICTURE GRID.
_____ 6. LOCATE POINTS A AND B. CONNECT THESE POINTS WITH THE SAME SHAPE OF LINE AS THE SMALL PICTURE. CONTINUE WITH C, D, ETC., UNTIL PICTURE IS COMPLETE.
_____ 7. MANUSCRIPT YOUR NAME, GRADE AND THE DATE ON THE DRAWING.

DRAWING FOR ENLARGING


0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
A
B
C
D
E
F
G
H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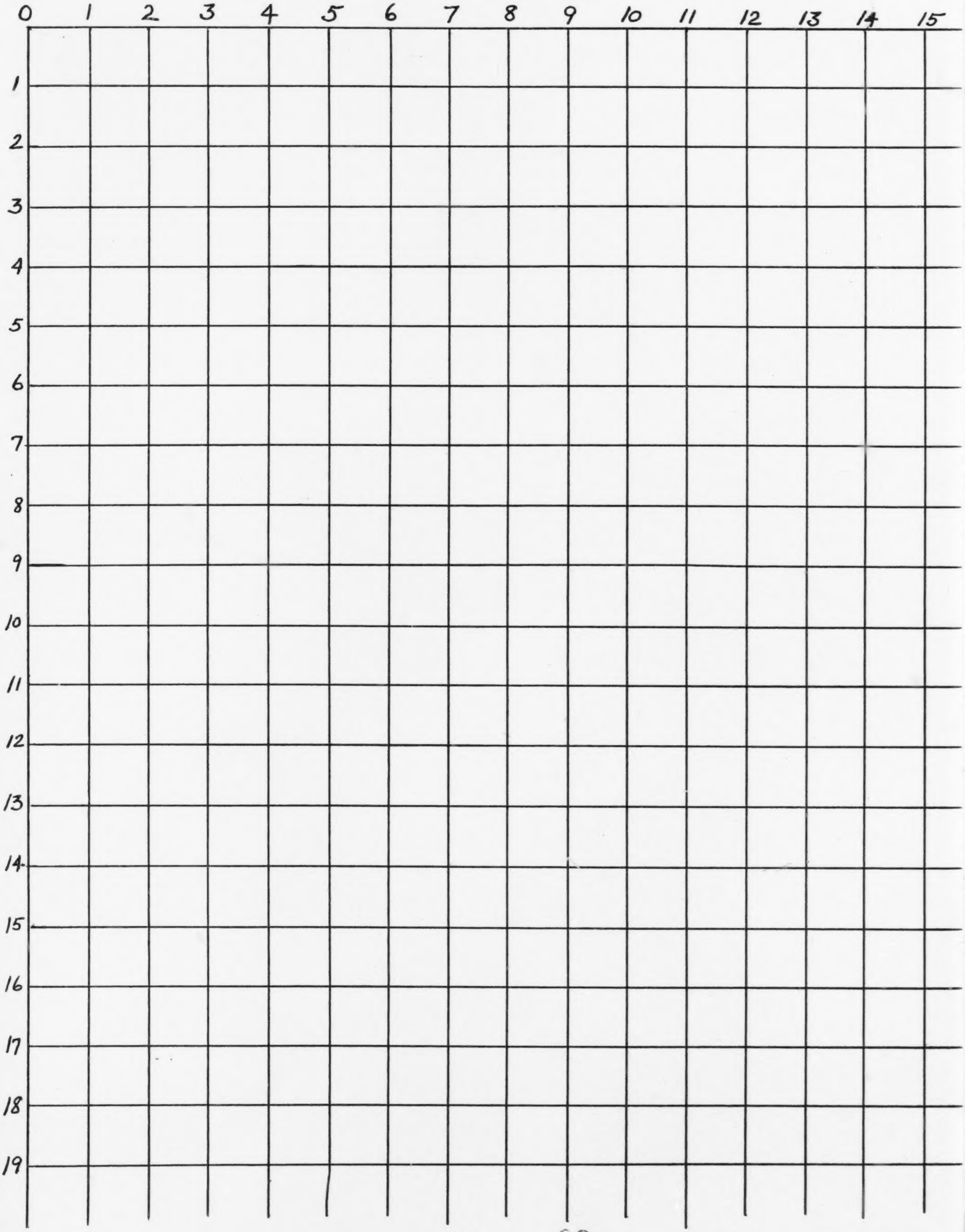
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A
B
C
D
E
F



Grade 6

Area: Metals - Chased Design

Projects: (1) Bracelet
(2) Letter Opener

Objectives:

- Use steel wool to polish and clean metal
- Transfer design with carbon paper
- File metal
- Chase design
- Use a chasing hammer
- Deburr an edge with a file
- Use abrasive cloth
- Use a bending jig.

Materials and Tools:

- 1/2" x 6" pre-cut 20 gauge nickel-silver
- 220 grit abrasive cloth
- 320 grit abrasive cloth
- 4/0 steel wool
- bracelet bender
- 6" x 6" - 1/4 steel plate
- chasing tools
- hammer
- 1/2 round 6" - 2nd cut mill file

Operations:

1. Select stock
2. Deburr (file) edges
3. Draw design for shape of project
4. Transfer design to metal using carbon paper.
5. File edges where necessary to get desired shape (step 3).
6. Transfer decorative design to metal using carbon paper.

TEACHER DEMONSTRATION: Procedure for chasing a straight line.

(1) Select and cut the required size piece of metal (can be pre-cut).
(2) Transfer the design to the metal by placing carbon paper over the metal, taping the design over the carbon paper, and tracing design. Remove carbon paper and design.
(3) Place the metal on a hard flat surface (preferably steel plate).
(4) Select the proper tracing tool (chasing tool).
(5) Starting from the point farthest away from you, hold the chasing tool tipped slightly rearward, tap chasing tool with a hammer. Move tool slightly along the line working toward yourself and tap with hammer.
(6) Repeat above until all lines are completed. The metal may be moved or turned so the lines are more readily available for chasing.
NOTE: BE SURE TO KEEP THE MARKS OF UNIFORM DEPTH.
(7) To make the line more distinct, repeat steps 5 and 6 to achieve desired depth.

Grade 6 - Metals (continued)

TEACHER DEMONSTRATION: Procedure for chasing curved lines.

Use a tool similar to the tracer (chasing tool), but which has a curved end in place of straight. Select a tool that has a curve that will approximate the curved line in the design.

TEACHER DEMONSTRATION: Using chasing punches (chisels)

These tools will not cut through the metal. The end of the hardened steel tool has a special shape or design which will produce tool marks in the surface of the metal. (Used for the background.) Tools must be selected which will give the desired decorations. These are tapped with a hammer.

Operations (continued)

7. Chase design on metal
8. Smooth edges and surfaces with 220 grit abrasive cloth.
9. Smooth edges and surfaces with 320 grit abrasive cloth.
10. Steel wool all surfaces with 4/0 steel wool.

NOTE: If this is the bracelet project, complete by bending with the bracelet bending jig.

Check for marks left by the bending jig and spot finish where necessary.

If doing the letter opener project, the end of the blade has to be filed to a knife edge.

PROCEDURE SHEET

NAME____

GRADE 6

AREA; METALS

PROJECT: CHASED DESIGN - BRACELET
- LETTER OPENER

SPECIFIC OBJECTIVES:

DEBURR AN EDGE WITH A FILE
USE ABRASIVE CLOTH
USE A BENDING JIG

OTHER INFORMATION:

SAFETY FIRST

USE STEEL WOOL TO POLISH AND CLEAN METAL
TRANSFER DESIGN WITH CARBON PAPER
FILE METAL
CHASE DESIGN
USE A CHASING HAMMER

MATERIALS AND TOOLS:

1/2" x 6" PRE-CUT 2 GAUGE NICKEL-SILVER
220 GRIT ABRASIVE CLOTH
320 GRIT ABRASIVE CLOTH
4/0 STEEL WOOL

BRACELET BENDER
6" x 6" - 1/4 STEEL PLATE
CHASING TOOLS
HAMMER
1/2 ROUND 6" 2ND CUT MILL FILE

OPERATIONAL STEPS:

_____ 1. SELECT STOCK
_____ 2. DEBURR (FILE) EDGES
_____ 3. DRAW DESIGN FOR SHAPE OF PROJECT
_____ 4. TRANSFER DESIGN TO METAL USING CARBON PAPER
_____ 5. FILE EDGES WHERE NECESSARY TO GET DESIRED SHAPE (STEP 3)
_____ 6. TRANSFER DECORATIVE DESIGN TO METAL USING CARBON PAPER.

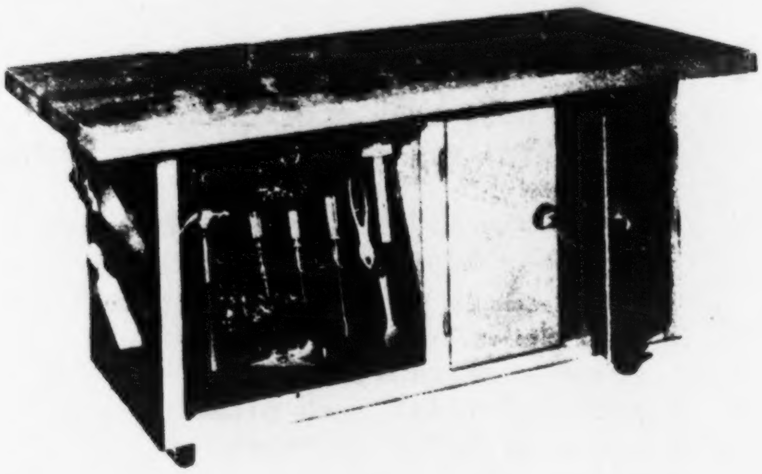
TEACHER DEMONSTRATION

_____ 7. CHASE DESIGN ON METAL.
_____ 8. SMOOTH EDGES AND SURFACES WITH 220 GRIT ABRASIVE CLOTH
_____ 9. SMOOTH EDGES AND SURFACES WITH 320 GRIT ABRASIVE CLOTH.
_____ 10. STEEL WOOL ALL SURFACES WITH 4/0 STEEL WOOL

NOTE: IF THIS IS THE BRACELET PROJECT, COMPLETE BY BENDING WITH BRACELET BENDING JIG. CHECK FOR MARKS LEFT BY THE BENDING JIG AND SPOT FINISH WHERE NECESSARY.

IF DOING THE LETTER OPENER PROJECT, THE END OF THE BLADE HAS TO BE FILED TO A KNIFE EDGE.

ELEMENTARY WORKBENCHES



Basic Tools:	Number
Woodworking Vises	4
Super Junior Clamps No. 54	2
Super Junior Clamps No. 55	2
Panel Saw 16 inches long	2
Coping Saws	2
Block Plane	4
Hand Drill	1
Screwdriver, 2½ inch blade	2
Hammer 7 oz.	4
Tri Square 6 inch	2
Wood Bench Rule 12 inch	1
Marking Gauge	2
Combination Pliers	1
Flat Nose Pliers	1
Needle Nose Pliers	1
Assorted Wood Files	1 dozen
Crestoloy Wrench 6 inch	1
Bench Duster	1
Hacksaw	1
Plastic Tipped Hammer (one end flat, one end cone shaped)	2
Brace	2
Drill Bits	2 each of various sizes
Tin Snip	1
Wood Burner Set	2
Mallet	2
Sandbag	6
Wire Cutter	2
Aluminum Forms	2
Compass	6
Knife	3
Chasing Tools	6
Countersink	6

AREA	MATERIALS AND SUPPLIES
Wood	1x6x6 White Pine (pre-cut)
	Scrap pieces for sanding
	1 piece of 1 inch stock (any shape) approximately 40 to 50 square inches in size
	Several pieces of odd shaped scraps (any thickness in size)
	Sanding block
	1 piece - 1x4x12 soft wood (pine preferable)
	1 piece of 1x4x4 inch pine
	1 piece of 1x2x2 inch pine
	1 piece 1x4x7 inch pine
	1 piece 1x2x3 inch pine
	1 piece dowel rod ¼x4
	2 pieces 1x12x10
	1 piece 1x4x6 pine
	2 pieces ¼ plywood 5x6
	1 piece 1x6 - 10½ (bottom)
	2 pieces 1x6 - 6 (ends)
	2 pieces 1x4 - 12 (sides)
	2 pieces 1x4x4
	1 piece 1x4x5
	1 piece 1x3¼x5
	1 piece - 3/8 x 3 dowel rod
	1 piece ½x6x15 (base)
	1 piece 1x6x6 (end supports)
	1 piece 1x1x6 (cleat to raise end)
	1 piece 1x8x12 soft maple
	molding stock
	2 pieces ¼ plywood 9x12
	Nails
	8 6d Casing Nails
	Assortment of various size brads and small nails
	1 4d Casing Nail
	2 1 inch brads
	6 3/4 inch #16 brads
	16 6d Common Nails
	12 6d Casing Nails
	10 3d galvanized shingle nails
	2 1¼ inch wire brads
	4 1 inch wire brads

AREA	MATERIAL AND SUPPLIES
Wood	Paper
	80 grit abrasive paper
	100 grit abrasive paper
	80 grit abrasive paper
	120 grit abrasive paper
	carbon paper
	150 grit abrasive paper
	100 grit abrasive paper
	220 grit abrasive paper
	Hardware
	Screws
	4 1¼x8 F H zinc plated screws
	2 #914 square bent screws
	Hooks zinc chromate - 1 inch
	2 #212 screw eyes
	2 1¼x6 F H wood screws
	2 screw post binders
	2 brass hinges 1x1 (screws included)
	Paint
	Paint thinner
	Varnish
	Paint and varnish thinner
	Paint
	Deft clear finish
	Oil
	Oil stain
	Mineral oil
	Olive oil
	Misc
	Liquid floor wax
	White glue (Elmer's or Wilhold)
	Pencil
	4½ inch rubber tack bumpers
	1 piece approximately 5x5 cork or asbestos tile
	Food coloring
	Waterlox (transparent)
	1 wood spring type clothes pin
	2 thick rubber bands
	Boat hull template
	Cloth
	1[illegible] inches of ¼ inch manila rope
	[illegible]tos shingle 8x10 (cut)
	1[illegible]
	4½ foot picture frame
	colored shoe polish (paste wax)
	Coping Saw Blades

AREA	MATERIALS AND SUPPLIES
Plastic	Plastic pre-cut plastic 2 pieces of 1/8 inch plastic 1½inch square 1/8 inch sheets (colors) 1 piece of 3/16 inch plastic 1x7 1/8 inch plastic 3 inch square Paper Sandpaper 120 grit sandpaper 220 grit sandpaper Cement plastic cement acrylic solvent cement Wood 5 pieces of wood 1x3x3 block of wood Misc 10 ¢ shapes pins (findings) steel wool tooth paste clothespins composite class pictures to be cut up for individual pictures key chains earring findings canvas gloves 20 - 6d casing nails
Leather	Leather 1½ inch x 5 leather (est.5¢) 1 pre-cut 1½ D leather piece (est. 15¢) 1 pre-cut 3½ D leather Kits Kits for pencil case Kits for purse Kits for comb case Misc sponge nail paper clips 1 3 inch D block Plastic template of design (selection) neutral shade paste shoe wax plastic lacing Elmer's glue leather stamps wooden mallet

AREA	MATERIALS AND SUPPLIES
Metals	Metal
	4x4 36 gauge soft copper foil
	4x4 28 or 30 gauge soft copper sheet
	4 inch diameter 24 gauge soft aluminum disk
	2 6 inch diameter 24 gauge soft aluminum disks
	½x6 inch pre-cut gauge nickel-silver
	6'x6" - ¼ steel plate
	Paper
	Carbon paper
	Old magazines
	Cloth
	cloth
	220 grit abrasive cloth
	320 grit abrasive cloth
	Misc
	1 4/0 steel wool
	Liver of sulphur
	Afixative spray
	Masking tape
	¼x5 inch sharpened dowel rod
	plastic molds
	8 d common nails
	brown paint
	3 paper clips
Drawing	Misc
	graph paper
	sharp pencil
	eraser
	small grid picture
	3-dimensional figure

GLOSSARY

Abrasive (paper) - paper or cloth coated with a substance such as emery or sand. Used to smooth or polish a surface. 80 grit (coarse), 220 grit (fine)

Acrylic plastic - a thermoplastic such as lucite or plexiglass.

Acrylic solvent cement - acrylic acid used to dissolve and fasten acrylic plastics; may also be a thin mixture of the plastic dissolved in acid.

Asbestos - a mineral used to make incombustible or fireproof cloth or rigid sheets.

Auger bit - a carpenter's tool with a spiral groove used for boring holes in wood; usually sized for larger holes such as 3/8", 1/2",----- 1" or more.

Bench rule - usually a 12" wood with metal ends or all metal scale calibrated in eighths or sixteenths of an inch, used on the carpenter's bench to lay out work.

Block-in - to lay out the overall dimensions of height, width and depth on paper or on a three dimensional solid.

Brace - the handle used to clamp and rotate an auger bit.

Brad - a small wire nail slightly enlarged in diameter on one end (the head) and pointed on the other end.

Casing nail - thin metal cylinder pointed on one end, slight enlargement and depression on other end; used to fasten window and door casings.

Chasing - to groove or decorate thin metal or leather with a pointed instrument.

Claw hammer - a hammer with a two purpose head, one end flat for driving nails, the other end tapered and V shaped to slide under the head of a nail for pulling.

Coping saw - a saw with a very thin blade and fine teeth for cutting thin or soft materials. Thin blade will allow a curved or circular saw cut.

Countersink - to cause the head of a nail, screw, or bolt to be flush with a surface; also the tool used for this purpose.

Dowel rod - cylindrical hardwood material used to fasten other pieces of wood together.

File - a steel bar, in various shapes such as flat, half round, etc., and with a tooth-like surface to cause an abrasive action when drawn across various materials such as wood, metal, and plastic. Example, mill file, cabinet file.

Finding - metal clasps, loops, etc. used on jewelry.

Grain - the arrangement of fibers, layers, or particles of wood, stone, or leather. End grain would usually be at right angles to the axis of the grain.

Grid - the arrangement of lines or other features to form squares, rectangles, or some other geometric pattern.

Hack saw - (see saws)

Hammer - a metal, wood, or plastic head in a variety of shapes attached to a handle (hand grip) used to tap or pound. See claw hammer.

Hand drill - a device using wheels and gears turned by hand to cause rotation of a drill bit.

Laminate - to make by building up in layers. Example, plywood.

Layout - to draw or scribe a line, pattern, or design on paper or other material (wood). Often a preliminary step.

Liver of sulphur - crystals dissolved in cold water forming an aqueous solution used to tarnish metal, especially copper.

Mallet - a hammer with a short handle and a soft head of wood, leather, or plastic.

Manila rope - a strong coarse rope made from fibers of the leafstalk of a Philippine tree related to the banana tree.

Marking gauge - a tool used for scribing a straight line on a board parallel to an edge of the board. A flat surface on the gauge slides along the edge of the board to be marked while a sharp point at a preset distance scores the board.

Mitre - to cut two pieces so that they form a corner, ususally a right angle.

Mitre box - a box built to guide the saw blade at a prescribed angle.

Molding stock - a shaped strip of wood, ornamental, used in carpentry work.

Screw - a metal fastening device with a spiral thread. A wood screw is pointed and tapered (conical) with a coarse thread. A machine screw or stove bolt is cylindrical with a fine thread (male) which is turned into a threaded hole (female). It is used primarily for fastening although it may be used to adjust or transmit power. Screws have a variety of heads (flat, round, etc.) for different purposes.

Screw eye - a screw with a loop instead of a head.

Shingle nail - (see nails)

Square - a tool for laying out right angles. Also the act of squaring a board, causing two edges or surfaces to be at right angles.

Stamping tools - usually used to form letters or a design on wood, leather, or metal. Like a punch with a formed end.

Steel wool - long shavings of steel matted in a pad for cleaning, smoothing and polishing.

Stock - raw material before final forming.

Straight edge - a wood or metal strip with an edge straight and true for drawing straight lines or testing surfaces for flatness.

Symbols, plan view - a series of line designations to represent, in a smiple way, doors, windows and other physical features of a building.

Template - a pattern or design cut on thin, stiff material to be traced in layout work.

Tin snips - a shears designed to cut light metal.

Three dimensional - having height, width and depth.

Tooling - to form a pattern by stamping or drawing on a surface, usually leather, soft wood or soft metal with stamping tools.

Try square (also tri) - an instrument for checking the accuracy of square work and for laying out right angles.

Twist drill bit - a cylindrical shaft of metal with a spiral groove and a sharp point used to drill holes.

Vise - a device consisting of two jaws, opened and closed by a screw, used for holding firmly an object being worked on.

Water lox - a paint product used to seal and stain or finish wood surfaces. Trade name for a particular brand of finishing material.

Multi-view - a series of related (orthographic) views such as top, front, right side, etc. Each view shows only one side of an object.

Nails, common - metal (mild steel), pointed and with a head; vary in size from 2d (two penny) with about 1000 to a pound to 60d with about 11 to a pound. See brad, casing nail, shingle nail.

Nail set - a tool like a punch, placed on the head of a casing nail and tapped to drive the head flush or below the surface of the wood.

Nail, shingle - a small nail with an ample head, usually coated to retard rust, used primarily to fasten shingles.

Pictorial - a picture view; a drawing or sketch showing more than one side of an object; three dimensional view.

Plane - a carpenter's tool for leveling, smoothing, or removing wood. Smooth plane for large surfaces, block plane for short, small areas or outside corners.

Pliers - a hand tool for gripping, cutting, twisting. Common pliers pivoted closer to one end to give a mechanical advantage; slip joint pliers allows one side to move out increasing the capacity of the jaws; flat nose pliers have square gripping tips which provide parallel surfaces when closed; needle nose pliers have long, thin tips handy when working with wire; side cutting pliers have a short nose, usually tapered, with sharp edges for cutting wire.

Punch, center - a tempered steel shaft pointed at one end used to make an initial opening in a surface, as a starting point for a drill bit.

Raising - embossed, lifted above the normal surface by a displacement of material.

Rip saw - (see saws)

Saw - a cutting tool consisting of a thin metal blade, band, or disk with sharp teeth on one edge, used to cut wood, metal, or other materials. Crosscut saw has about 14 teeth per inch spaced and set to make a smooth cut across the grain of wood. Rip saw has about 11 teeth per inch spaced and set to make a smooth cut with the grain of wood. Hack saw has very fine teeth close set and is used for cutting metal or other dense materials.

Scale - an instrument to measure weight or lineal distance. Also a ratio of units such as 1" = 1' 0", 1/2" = 1", etc.

Whip stitch - a sewing stitch made by overcasting the edge of the material. To sew through material, pass the thread over the edge and again through the material from the same side, repeatedly.

Wire cutter - (see pliers)

FRED M. ATKINSON
Superintendent of Schools
10025 Penn Ave. So.
Bloomington, Minn. 55431